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# Ontario Department of Education

# Recommendations and Regulations

FOR

## THE ESTABLISHMENT, ORGANIZATION AND MANAGEMENT

OF

## INDUSTRIAL, TECHNICAL AND ART SCHOOLS

AND

## INDUSTRIAL, TECHNICAL AND ART DEPARTMENTS IN HIGH AND CONTINUATION SCHOOLS AND COLLEGIATE INSTITUTES

THE INDUSTRIAL EDUCATION ACT
THE ADOLESCENT SCHOOL ATTENDANCE ACT
THE TECHNICAL EDUCATION ACT

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PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

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TORONTO
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1919

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## THE SCOPE OF THE INDUSTRIAL EDUCATION ACT

**1.**—The Industrial Education Act of 1911, and the subsequent amendments thereto, provide for the organization of industrial and technical instruction and training, in day and evening schools, for young persons who expect to enter the various trades and industries, and for those who have entered an occupation and desire to improve their general education or their vocational efficiency.

## TYPES OF SCHOOLS AND CLASSES PROVIDED FOR UNDER THE INDUSTRIAL EDUCATION ACT

### Day Industrial Schools:

**2.**—The Day Industrial Schools are designed to give a thorough training in the essentials of a general education as a basis for citizenship and vocational efficiency and, at the same time, to furnish specialized training in the subjects and operations which are fundamental to trades and industries.

In the organization of these schools, the importance of developing well-informed and intelligent citizens is to be as clearly recognized as the necessity for the training of efficient workers. Moreover, it is to be remembered that trained intelligence is an important factor in industrial efficiency.

### Day Technical Schools:

**3.**—The Day Technical Schools and Classes are planned to meet, in a corresponding way, the needs of those who are preparing for positions in which specialized knowledge of a technical character is required.

### Day Art Schools:

**4**—The Day Art Schools and Classes provide the training needed by those who are preparing to follow either the fine or the applied arts as their life vocation. Special courses may also be offered for those who are following other pursuits and find it necessary or desirable to have a knowledge and an appreciation of art.

### Part-time Co-operative Classes:

**5.**—The Part-time Co-operative Classes in industrial, technical, and art subjects are planned to provide supplementary training for those actually engaged in industrial pursuits. It has been found, in some cases, that arrangements can be made for employees to attend school from one to two hours a day, or for one or more half days per week, and to work in the shop or factory for the remainder of the working time. In other cases, it has been found more practicable to have the employees grouped in pairs, the one taking the place of the other alternately at school and at work. All these plans have been found, by actual experience, to be practicable under suitable conditions.

### Special Day Industrial Classes:

**6.**—The Special Day Industrial Classes are planned to meet the needs of those, not otherwise cared for, who can avail themselves of opportunities for supplementary training in the day time. Men working on night shifts, women who can

spare the time from their home duties more easily in the morning or in the afternoon than in the evening, and persons who may, through slack periods in their particular line of work, or for other reasons, find themselves able to devote full time for a limited period, to securing further training in line with their occupation, may take advantage of the opportunities offered through these classes.

Adolescents under eighteen years of age may attend these classes only on the recommendation of the Principal of the school, and with the approval of the Minister. Such students, if not engaged at work, should attend full-time day industrial, technical or art classes and, if engaged at work, should be enrolled in part-time co-operative classes.

**Evening Schools:**

**7.**—The purpose of the evening schools and classes is to offer opportunities for advancement, through education and training, to men and women at every stage of their industrial career. Any course of instruction, designed to meet the needs of industrial workers in any field or the requirements of any industry, may be organized under the provisions of the Industrial Education Act.

## PROCESS OF ESTABLISHMENT

**8.**—(1) The authority to take the initial steps leading to the organization of industrial, technical or art schools, rests with the High School Board, Board of Education, or Continuation School Board in the community concerned. If such board decides to proceed with the establishment of such a school or course, its first responsibility is to select and appoint an Advisory Industrial Committee in accordance with the provisions of the Industrial Education Act. See sections 6, 8, and 10 of the Act, pages 44-47.

(2) The Advisory Industrial Committee shall be composed of eight or twelve persons, as the Board may direct.

(*a*) When the number of members is eight, the Advisory Industrial Committee shall be made up as follows:

(i) Four members of the Board, including one representative of the Board of Public School Trustees and one representative of the Board of Separate School Trustees, if any;

(ii) Two persons, not members of the Board, who are engaged as employees in the manufacturing or other industries carried on in the local municipality, or in the county or district in which the school is situate; and

(iii) Two other persons, not members of the Board, who are employers of labour or directors of companies employing labour in manufacturing or other industries carried on in the local municipality, or in the county or district in which the school is situate.

(*b*) When the number of members is twelve, the Advisory Industrial Committee shall be made up as follows:

(i) Six members of the Board, including one representative of the Board of Public School Trustees and one representative of the Board of Separate School Trustees, if any;

(ii) Three persons, not members of the Board, who are engaged as employees in the manufacturing or other industries carried on in the local municipality, or in the county or district in which the school is situate; and

(iii) Three other persons, not members of the Board, who are employers of labour, or directors of companies employing labour in manufacturing or other industries carried on in the local municipality, or in the county or district in which the school it situate.

(3) All members of the Advisory Industrial Committee shall be British subjects, and shall be persons who, in the judgment of the Board, are specially competent to give advice and other assistance in the management of the school or courses under the charge of the Advisory Industrial Committee. Where there are likely to be classes for adolescent girls, and for women, it is advisable for the Board to appoint one or more women as members of the Advisory Industrial Committee.

The powers of the Advisory Industrial Committee are set forth in section 11 of the Industrial Education Act. See page 47.

(4) The Advisory Industrial Committee having been appointed, and having provided for its own initial organization, should appoint a principal of the schools or classes as recommended in Regulation 13 (1). The committee and principal should then proceed to make a careful survey of the trades and industries of the district, for the purpose of discovering the subjects in which it is most desirable to have instruction offered, and of determining the kind of instruction that will be required to meet the needs of the community. Upon the request of the Advisory Industrial Committee, the Department of Education will send a representative to assist in making such a survey, and in organizing classes.

(5) Having ascertained the needs and determined the courses to be offered in such school or classes as the Advisory Industrial Committee has decided to organize, the formal approval of the Minister of Education should be secured. For conditions see Regulation 9, page 8.

(6) When the approval of the Minister is assured, the opportunities offered for training should be brought to the attention of those who are likely to take advantage of them.

(*a*) If the decision has been to organize a Day Industrial, Technical or Art School, the object and character of the courses to be offered should be advertised judiciously and extensively. They should be brought directly to the attention of the parents or guardians of all the boys and girls of the Public and Separate Schools who have at least Fourth Form standing, who do not intend to take the courses provided in the High Schools. The names and addresses of all those who drop out of school after they have reached the age of fourteen should be brought to the attention of the Advisory Industrial Committee in order that the opportunities offered in the school and classes organized under the committee, may be brought to their attention, and to the attention of their parents or guardians.

(*b*) If the decision has been to organize evening classes, part-time co-operative classes, or special day classes in industrial, technical, or art subjects, the object and character of the courses to be offered should be judiciously and extensively advertised through the local press, through the suitable distribution of attractive posters, through the co-operation of employers' and employees' organizations, through the homes of the children attending the day schools, and through the students who may have been enrolled in the evening classes of the preceding year.

(7) The employers should be urged to show a practical interest in the classes by granting certain privileges, bonuses, increases in wages or promotion to employees taking satisfactory courses of instruction in such school or classes.

(8) The Principal should for some days before the school opens be in a designated place, at the school if it is conveniently located, at stated times to advise and enroll prospective students. Wide publicity should be given this arrangement that it may come to the attention of all interested.

## CONDITIONS OF ESTABLISHMENT

**9.**—The establishment of a Day or Evening Industrial, Technical, or Art School under Section 4 of the Industrial Education Act may be approved by the Minister when it is shown to his satisfaction:

(1) That the school is so situated as to be readily accessible to pupils from the surrounding district;

(2) That there is a reasonable prospect of an adequate attendance of duly admitted pupils; and

(3) That the Board has provided:

(*a*) An Advisory Industrial Committee as defined in Section 6 of the Industrial Education Act;

(*b*) Adequate and suitable accommodations and equipment as prescribed in Regulations 11 and 12;

(*c*) A staff adequate and suitable for the teaching of the subjects taken up, as prescribed in Regulation 14;

(*d*) A general organization in accordance with the regulations pertaining to the class of schools concerned.

## REQUIREMENTS FOR ADMISSION

**10.**—(1) Applicants who are qualified under the regulations for admission to a High School may be admitted to the Day Industrial, Technical and Art Schools and Classes.

(2) Applicants who have at least the standing of the Fourth Form of the Public and Separate Schools, and who are able to take up the courses selected, upon the recommendation of the principal and the approval of the Advisory Industrial Committee, may be admitted to the Day Industrial and the Day Art Schools and Classes. Whenever feasible, a report on the attainment and record of the applicant shall be obtained from the principal of the school which the applicant last attended. If, in any case, the parent or guardian of an applicant makes a written request to the Advisory Industrial Committee that such applicant be permitted to take a special programme of work which does not correspond to the course of study required by the regulations, such applicant may be admitted for such special course upon the recommendation of the principal of the school, and the approval of the Minister.

(3) Persons who are employed may be admitted to the Part-time Co-operative Classes, and the Evening Industrial, Technical and Art Classes without regard to their school standing, provided the principal is satisfied that they can profit by the instruction being given.

## ACCOMMODATION

**11.**—(1) The accommodation for Day Industrial, Technical, and Art Schools and Classes may be provided either in a separate building designed for the exclusive use of such schools and classes, or in a wing or section of a building set apart for the use of such schools or classes. Full provision should be made for class-rooms, physical and chemical laboratories, and workshops of various kinds depending on the requirements of the locality. In addition to these provisions, a building devoted exclusively to technical education should contain a gymnasium, an assembly hall, a library, and such offices and teachers' rooms as may be deemed necessary.

(2) Where industrial, technical or art classes are established as a department of a Continuation School, a High School, or a Collegiate Institute, arrangements shall be made whereby the staff and students of the department will have the facilities of the gymnasium, assembly hall, and library, available for their use when necessary, consistent with a fair and reasonable adjustment of all the interests concerned.

(3) The plans for all such buildings, and for the modification of buildings already erected, shall be submitted to the Minister of Education, and shall be approved by him before building operations are begun.

(4) A wide range of evening class-work may be undertaken in any school building, especially when provision has been made in the accommodations and equipment for household science and manual training. The ordinary class-rooms and laboratories are suitable for classes in academic and certain technical subjects.

(5) Art and mechanical drawing may be taught in a class-room by placing the drawing boards on the desks, but a suitable room, provided with special tables, is to be preferred.

(6) Classes in millinery and dressmaking are best carried on in rooms in which there are no fixed desks or chairs. Where such rooms are not available, the assembly hall, the gymnasium, or the main halls of a building, when wide, may be utilized for the purpose. The furniture should consist of ordinary plain tables and chairs. In the dressmaking room, space should be provided for a sufficient number of sewing machines, one for about every five pupils in attendance at the class.

## EQUIPMENT

**12**—(1) No precise inventory of the machines and tools required for all the various forms of instruction which may be undertaken in the Day and Evening Industrial, Technical, and Art Schools and Classes can be given because industrial and technical requirements are so varied that the equipment cannot be standardized in the same way as that for other forms of education. As far as practicable the equipment shall be in each case that used in the trade or industry itself.

(2) A good High or Public School equipment for Household Science will be suitable for evening class instruction in this subject. See Mannual Training and Household Science Regulations, pages 14, 15, 28-33.

(3) A well-equipped wood-working shop of a Manual Training Department (Circular No. 3, pages 23-29) provides fairly satisfactory accommodation for

classes in carpentry, pattern-making or cabinet-making, if a limited range of work be undertaken. To provide for a more extensive course, power wood-working machinery, including a band saw, a lathe, a circular saw, a jointer, and a planer should be installed.

(4) The forge and machine shop equipment of a manual training installation provides for a beginning in machine shop practice. Where work is to be extended to the training of apprenticed machinists a more extensive equipment is necessary, consisting of additional lathes, a power drill press, a power hack-saw, a power-driven emery wheel for sharpening tools, a planer, a shaper, a universal milling machine, and universal grinder, and a more complete equipment of bench tools and machine tool accessories.

## ORGANIZATION AND MANAGEMENT

**13.**—(1) The Advisory Industrial Committee is responsible for the management and control of all the Industrial, Technical, and Art Schools and Classes under the Industrial Education Act. For effective organization, it is essential that the School Board, upon the recommendation of the Committee, designate a qualified man to act as principal of such schools or classes. The principal should be a man, who, in addition to the requisite scholarship, possesses both executive ability and general mechanical knowledge. All phases of the work should be under his supervision, and in general, he should act as the executive officer of the committee. As the majority of the assistant instructors will be men and women from the trades and industries with little or no previous experience in teaching or in solving the other problems of the class-room, it will be necessary for the principal to give close attention to their work and to render every assistance possible, with a view to strengthening their methods and their hold upon their classes. It is essential also that the principal keep in close personal touch with the trades and industries of his community and of the Province, in order to make sure that the instruction and training given the students will be of real help in enabling them to meet their requirements.

(2) Care should be taken to keep a complete record of the pupils in attendance. For this purpose, the Department of Education provides for evening schools a system of registration cards which give all the particulars required for the reports to be made to the Department of Education. The ordinary High School register may be used for the registration of day school pupils. The principal shall report monthly to the Advisory Industrial Committee, and his report shall show for each subject the number registered, the number in attendance, the average attendance, and the percentage of the registered attendance.

(3) Every effort should be made to keep the attendance up throughout the term. The cause of absence or discontinuance should be ascertained in every case if possible. The best plan is to obtain the facts through personal inquiries by the teachers or members of the committee. The remission of fees for good attendance records is another method found to be effective in increasing regularity of attendance. The names of persistent absentees who cannot account satisfactorily for their absence should not be retained on the register. Where fees are charged, the principal should be instructed to remit them, if in his judgment the financial condition of the student or his parents renders it advisable to do so. This should, of course, be done privately.

(4) As far as practicable, the committee should provide for a follow-up system whereby it is kept in touch with all adolescents during their first few years in wage earning occupations with a view to having them continue to supplement their practical experience by further training.

(5) Classes should be small. No class should exceed twenty; fifteen is a better number. No matter what system of classification is adopted, much of the instruction must be individual. In industrial work particularly, the more the individuality of the pupil is recognized and the more his special requirements are taken into consideration, the more regular will be his attendance and the more satisfactory will be the results.

(6) The classification of students should depend upon the age, the occupations, and the qualifications of those who apply for admission. In the Day Industrial, Technical and Art Schools it will not be necessary to separate the sexes in the subjects in which they are to receive the same instruction, such as literature, composition, history, etc. In the Evening Classes for men and women, however, they should, where possible, be separate and they should also be distinct from those for the boys and girls. Adults do not care to show their lack of knowledge or training before children. It is frequently necessary to organize even in the same subjects different classes for persons of different occupations. For example, the drawing or the mathematics (beyond the rudiments) required by the carpenter is different from that required by the machinist.

(7) The methods of approaching subjects in the evening classes should differ materially from those employed in the day schools. Students in the evening classes have a tendency to become discouraged and to discontinue their attendance if they do not see, almost immediately, the bearing of the instruction on their daily work. In subjects with a practical bearing, such as mechanical drawing, mathematics, and science, they should not be kept working at preliminary plates, exercises and problems which, with their limited knowledge, they cannot recognize as being of practical value. Work in all subjects should begin with shop problems of immediate use. The theoretical work necessary to the solution of the problems should at first be taught incidentally. After the student is convinced of the applicability of the instruction to his needs he will be quite willing to make a special study of the principles on which the problems are based. Drawing, for example, should be taught more generally from objects, specifications, and dimension sketches rather than from plans and plates and should result, in all cases, in the ability to read and interpret working drawings.

The teacher should prepare a summary of each lesson in the form of typewritten sheets or cards, which should be handed to the students at the close of the lesson. This method enables students who are unavoidably absent to keep up the continuity of the work and gives all an opportunity for review before the commencement of another session.

First and second year students should not be taught together, and no attempt should be made to take students over work a second time except in so far as a preliminary review is necessary.

(8) While Evening Industrial, Technical, and Art Classes and Evening Public or Separate School Classes or Evening High School Classes may be held in the same building and, at the same time, it is to be noted that these classes are under different management. To prevent a conflict of authority the School Board should

designate which of the principals is to have charge of the parts of the accommodations and equipment in general use.

(9) It is to be noted also that while certain branches, such as arithmetic and bookkeeping, may be subjects of instruction in Evening Public or Separate Schools or Evening High Schools and also in Evening Industrial, Technical, and Art Classes, only those courses in which such branches are taught with a distinctively industrial bias are to be carried on under the authority of an Advisory Industrial Committee. For example, classes in bookkeeping, typewriting, and stenography are not to be classified as industrial, but classes giving instruction either in the simple accounts required by mechanics or in the more specialized forms of bookkeeping required by builders, contractors, or persons in other industrial occupations, or in estimating, cost accounting, etc., may be so classified.

## QUALIFICATIONS OF STAFFS

**14.**—(1) The qualifications of the staffs shall be as follows:

(*a*) (i) For the academic subjects of the evening schools a certificate approved by the Minister and held by teachers who have duly familiarized themselves with the industrial requirements of the district.

(ii) For the academic subjects of the day technical courses, at least a High School Assistant's certificate; for the academic subjects of the day industrial courses, at least a First Class Public School teacher's certificate; these certificates to be approved by the Minister and held by teachers who have duly familiarized themselves with the industrial requirements of the district.

(*b*) (i) For the vocational subjects of both the day and the evening schools an Interim, a Permanent, or a Temporary certificate, covering the subject or subjects, that a teacher is to be licensed to teach.

(ii) For the theoretical and practical technical work, teachers specially trained at industrial or technical institutions.

(2) To obtain an Interim certificate for teaching a trade or a technical subject, the candidate must have had training approved by the Minister in the technical or trade subject, or subjects, in which the candidate applies for a license to teach, and must have taken also an improved course of training as a teacher.

(3) To obtain a Permanent certificate the candidate must hold an Interim certificate and have had two years' successful experience in teaching in Ontario, approved by an inspector.

(4) Temporary certificates will be granted to those who have had approved technical training or trade experience and who can furnish evidence of possessing the essentials of a fair general education. Such certificates are granted only on the application of a Board of Trustees to the Department. This application must state the subject, or subjects, for which the candidate desires a license to teach, and must be accompanied by a statement of the qualifications of the applicant, on an official form to be supplied by the Department.

(5) If the statements of the qualifications of any of the teachers for whom certificates are requested have not been furnished to the Department of Education, such statements must accompany their applications. Official forms for the purpose are supplied by the Department on request.

## DUTIES OF STAFF

**15.**—(1) The head teacher of an Industrial, Technical or Art School shall be called the Principal, and the other teachers Assistants.

(2) The authority of the principal shall be supreme in all matters of discipline in his own school, subject to the regulations hereinafter provided.

(3) It shall be the duty of the Principal:

(*a*) To admit no student who is not eligible for admission under Regulation 10.

(*b*) To admit no student who has been enrolled in another school unless he presents a letter of honourable dismissal from the principal thereof. In the event of a dispute, the parties thereto shall submit full particulars of the question to the Director of Technical Education.

(*c*) To be responsible for the registration of pupils and to keep such records and to make such reports as may be required from time to time by the Department of Education.

(*d*) (i) To determine the number of Forms, the number of students to be assigned to each Form and the order in which the subjects in each Form shall be taken up by the students.

(ii) To make such promotions from one Form to another as he may deem advisable.

(*e*) Subject to the regulations to assign the subjects of the courses of study among the Assistants.

(*f*) (i) To bring to the notice of the Advisory Industrial Committee, parents, guardians and pupils, from time to time as he may deem it advisable, such of the provisions of the regulations as apply to them respectively.

(ii) When the school opens, and as often thereafter as may be necessary, the Principal shall duly explain to the pupils their duties, and the courses of study.

(*g*) To make, as far as practicable, suitable arrangements for the oversight and comfortable accommodation of those pupils of the Day Schools whom he has permitted to be present in the school building during the noon recess or after the close of school; also for the supervision of the playgrounds during the recesses.

(*h*) To give assiduous attention to the health and comfort of the pupils, to the cleanliness, temperature, and ventilation of the school house, to the care of all maps, apparatus, and other school property, to the preservation of shade trees and the orderly arrangement and neat appearance of the playgrounds, and to report promptly to the Advisory Industrial Committee and to the municipal health officer the appearance of any infectious or contagious disease in the school, or the unsanitary condition of the school house, outhouses, or surroundings.

(j) To refuse admission to the school of any student who he believes is affected with, or exposed to, chicken pox, smallpox, cholera, glanders, scarlet fever, scarlatina, diphtheria, whooping cough, measles, mumps, or consumption, or other infectious or contagious disease, until furnished with a certificate of a medical health officer or of a duly qualified medical practitioner approved by him, that all danger that would arise from the presence of such student has passed.

(*k*) To suspend any pupil guilty of persistent truancy, or persistent opposition to authority, habitual neglect of duty, the use of profane or improper language or conduct injurious to the moral tone of the school, and to notify the parent or

guardian of the pupil, and the Advisory Industrial Committee, of such suspension; but the parent or guardian of any such pupil may, however, appeal against the action of the Principal to the Advisory Industrial Committee, which shall have power to remove, confirm, or modify such suspension.

(4) If a parent or guardian fails, after reasonable notice by the Principal, to pay the school fees of his child or ward, or to provide him with the text-books or other supplies required in his course of study or to pay the fees imposed for such purpose by the Advisory Industrial Committee, the Principal shall notify the Advisory Industrial Committee promptly of such neglect and the Advisory Industrial Committee may suspend the pupil, or it may itself provide him with such text-books and other supplies, and may exempt him from the payment of school and other fees.

(5) If a student injures or destroys school property the Principal shall report to the parent or guardian, and, if within a reasonable period the parent or guardian fails to make good the damage, the Principal shall submit the matter promptly to the Advisory Industrial Committee for settlement.

(6) When so requested, every Principal shall furnish the Minister and the Director of Technical Education with any information which it may be in his power to give respecting the condition of the school premises, the discipline of the school, the progress of the students, and any other matter affecting the interests of the school, and shall prepare such reports to the Advisory Industrial Committee as may be required by it.

(7) When the Principal in charge of an Industrial, Technical, or Art School has charge of more than one day or evening school or course, he shall be called the Supervising Principal, and the duties and powers of the other Principals shall be subject to such modifications as may be made by the Advisory Industrial Committee with the approval of the Minister.

(8) The Instructors in an Industrial, Technical, or Art Department, in connection with a High or Continuation School or Collegiate Institute, shall be subject to the authority of the Principal of such school as is set forth in Regulation 7 of the Continuation School and Regulation 10 of the High School Regulations, with such modifications as may be made by the Advisory Industrial Committee, with the approval of the Minister.

(9) (*a*) Every Instructor of a day school should be in his place in the school at least fifteen minutes before the opening of the forenoon session and at least five minutes before the opening of the afternoon session.

(*b*) Every Instructor of an evening school shall be in his place at least ten minutes before the opening of the evening session.

(10) The vocational counsellors, appointed under the authority of section 11, subsection 5, of the Industrial Education Act, shall, under the direction of the Advisory Industrial Committee, collect and distribute information regarding available occupations and employments, and offer such counsel to the pupils of the school under the charge of the committee as will enable them to plan intelligently their vocational and educational advancement.

## DUTIES OF PUPILS

**16.**—(1) (*a*) A pupil registered in a day or evening school shall attend punctually and regularly.

(*b*) He shall be neat and clean in his person and habits, diligent in his studies, kind and courteous to his fellow pupils, obedient and respectful to the instructors, and shall, in the case of a day school, submit to such discipline as would be exercised by a kind, firm, and judicious parent; and in the case of an evening school to such discipline as a judicious Principal may decide to be suitable.

(2) (*a*) (i) A pupil of a day school on returning to school after an absence shall give the Principal, from the parent or guardian, orally or in writing, as may be required by the Principal, the reason for his absence. If the reason is not satisfactory, the Principal shall communicate with the parent or guardian, and, in the event of no satisfactory explanation, he may refuse the pupil admission thereafter, but, in that case, he shall submit the question forthwith to the Advisory Industrial Committee for final settlement.

(ii) A pupil of an evening school on returning to school after absence shall give the Principal a satisfactory reason for such absence.

(*b*) A day pupil may retire from school at any hour with the consent of the Principal, or at the request, either oral or written, of his parent or guardian; an evening school student may do so with the consent of the Principal. If, however, the Principal has reason to believe that an unjustifiable use is being made of this privilege, and is unable to secure due amendment, he shall submit the question forthwith to the Advisory Industrial Committee for settlement.

(*c*) A day pupil shall be responsible to the Principal for his conduct on the school premises and on the way to and from school, except in the case of a day student accompanied by his parent or guardian or by some person appointed for this purpose by such parent or guardian.

## SCHOOL TERMS AND SESSIONS

**17.**—(1) Except with the special approval of the Minister, the school year of a Day Industrial, Technical, and Art School shall consist of three terms; the first shall begin on the first Tuesday of September and end on the twenty-second day of December, the second shall begin on the third day of January and end on the Thursday before Easter Day, and the third shall begin on the second Monday after Easter Day and end on the twenty-ninth day of June.

(2) Every Saturday, every public holiday, and every day proclaimed a holiday by the Council of the Municipality in which the school is situated shall be a school holiday.

(3) Unless otherwise approved by the Minister, the pupils shall assemble for study at nine o'clock in the forenoon, and shall be dismissed not later than four o'clock in the afternoon; but where practical work is emphasized in the programme, the hour for closing may be extended by the Advisory Industrial Committee to five o'clock.

(4) Such recesses at noon and during the forenoon and afternoon shall be allowed as the Advisory Industrial Committee may approve; but in no case shall the number of school hours be less than five hours a day, including the recesses in the forenoon and afternoon.

**18.**—The terms and sessions for Part-time Co-operative and Special Day Industrial, Technical, and Art Classes shall be such as meet the conditions in the community concerned, subject in each case to the approval of the Minister.

**19.**—(1) Subject to the approval of the Minister, the school year for evening classes shall consist of two terms, beginning and ending on such dates and with such vacations as the Advisory Industrial Committee may determine.

(2) The evening classes shall be open for at least an hour and a half of actual instruction on each of at least two evenings a week.

## COURSES OF STUDY

### Day Industrial Schools

#### General

**20.**—Where practicable, Advisory Industrial Committees should establish a full four years' course open to pupils who have passed the Entrance Examination of the High School. Those who are admitted from the Fourth Form of the Public School should take an additional year of preliminary training.

**21.**—The following subjects of instruction are obligatory in every day industrial school for boys and girls:

(1) Instruction in manners and morals.
(2) Instruction in physical culture.
(3) Instruction in hygiene.
(4) Academic courses in reading and literature, composition, including the essentials of grammar, arithmetic, history, and civics, geography, and elementary physics.
(5) An approved course in either freehand drawing and industrial design or mechanical drawing.
(6) Instruction in some approved form of industrial work.
(7) Study of materials.

The obligatory subjects named above are to be regarded as the minimum requirements in the courses of the first and second years, but it is not to be inferred that instruction in other subjects may not be provided. For example, on the academic side, courses in algebra, geometry, and chemistry are usually offered.

**22.**—Fifty per cent. of the time devoted to instruction in the courses of the first and second years shall be given to the subjects prescribed in section 21 (1), (2), (3), (4), and fifty per cent. to the subjects prescribed in section 21 (5), (6), (7). Drawing is fundamental in the industries and should be apportioned at least four or five instruction periods per week.

**23.**—With the Minister's approval, the number and the scope of the subjects on the academic side may be reduced, and the industrial work of the courses emphasized during the third and fourth years. While the industrial work for pupils in the first and second years of the courses may be selected with a view of furnishing variety in experience which will serve as a basis for an intelligent choice of an industrial career, the courses of the third and fourth years should furnish specialized training for particular vocations.

### Course in Manners and Morals

**24.**—Instruction in moral principles and practice and in good manners, incidentally, from current events, from lessons in literature, history, etc., by suitable selection of supplementary reading, and especially by the example of the teacher and the spirit and general *esprit de corps* in the school which he secures.

### Course in Physical Culture

**25.**—(1) The symmetrical development of the body, securing, at the same time, strength and grace, with correct and prompt obedience to the will. A systematic course of exercises in drill and calisthenics, both free and with apparatus.

(2) Where a Cadet Corps is maintained the course of instruction prescribed by the regulations of the Department of Militia and Defence should be given.

(3) When the weather and the accommodations permit, the course in physical culture shall be taken up systematically at least an hour and a quarter every week in each year throughout the course.

(4) No pupil shall be exempted from the course in physical culture except upon a medical certificate, or on account of evident physical disability, or for other reasons satisfactory to the Principal.

(5) In all the years the sexes shall be separately trained.

(6) When the weather permits the Principal may substitute each week, for not more than half the time prescribed above for physical culture, suitable sports and games in which all the members of a class shall take part, and which shall be under the supervision of the members of the staff.

### Course in Hygiene

**26.**—The course in hygiene should give such knowledge of personal and community health care as every intelligent and public-spirited citizen should have; the hygiene of the home, the shop, the factory, and of the community as a whole together with such topics as fresh air and ventilation, disease germs, bad effects of dust, water supply, sewage disposal, public health laws, care of the skin, the nose, the throat, the ears and the teeth, foods and digestion, the bones and muscles, the nervous system, exercise, work and recreation, effects of stimulants and narcotics, first aid, bleeding, fainting, asphyxiation, drowning.

### Course in Industrial Work

**27.**—(1) The industrial or practical work for boys should be chosen from the more important trades and industries of the Province, such as the building trades, the engineering trades, the electrical trades, the printing trades, the mining industries, the textile industries, etc.

(2) The industrial or practical work for girls shall include the home-making subjects, such as cooking, housekeeping, home economics, home nursing, sewing and home dressmaking, home millinery, and instruction in the more important industrial employments for women.

(3) No definite course in industrial work, for either boys or girls, is prescribed by the Department. The needs and conditions of different localities vary so much that the Industrial Education Act leaves to the Advisory Industrial Committee the initiatory steps in the settlement of the practical courses. The matter of basic importance, is the careful survey of the needs of the locality referred to in Section 4 of Regulation 8 above. On the basis of the needs revealed by the survey, the principal in charge shall prepare his recommendations as to subjects and courses for the consideration of the Advisory Industrial Committee. When an agreement has been reached regarding the programme of work to be offered, the plan shali be submitted to the Minister for his approval.

(4) The Directors and Organizers of the Department will be prepared to confer with Advisory Industrial Committees or Principals and give assistance in determining details of courses of study. From time to time, the Department issues circular letters containing suggestions to principals and teachers with direct bearing upon courses and methods of instruction in individual subjects.

### Course in Academic Subjects

**28.**—Subject to the foregoing regulations and to instructions that may be issued by the Minister from time to time, the General Syllabus for the academic subjects of the first and second years of the Day Industrial Schools for boys and girls shall be as set forth below.

The courses to be offered in any school in the third and fourth years shall be prepared by the Principal in accordance with Regulation 23 and when endorsed by the Advisory Industrial Committee submitted to the Minister for approval.

#### First Year

(1) (*a*) *Composition, Grammar and Spelling.*—The practical study of English grammar in its relation to composition; oral and written composition; elements of narration, description and exposition; letter writing; the spelling of words in common use, with emphasis on words used in men's and women's trades; class debates, correction of mistakes made in speaking and writing; business forms and correspondence.

(*b*) *Literature.*—Intelligent comprehension of suitable authors; systematic oral reading in class; memorization and recitation of choice selections; reading of standard authors at home, and in school, aloud and silently, also of books and magazines that bear on the student's special course; the reading and study of articles in industrial and scientific books and journals.

(*c*) *Arithmetic.*—A thorough drill in elementary rules and in vulgar fractions, decimals, ratio and proportion in their application to shop problems of trades for men and women; elements of commercial arithmetic, including insurance, taxes, interest and discount, and simple accounts related to business problems, such as cost, bill for articles made, etc.; square root, mensuration of areas of plane figures, the triangle, the parallelogram, the trapezium, the circle, and of simple solid figures; measurements by use of measuring tools used in trades for men and women; calculations by graphic methods and by pocket-book formulae.

(*d*) *Algebra.*—Elementary rules; easy fractions; simple equations of the first degree of one unknown; plotting of points and the construction of simple graphs; application of algebraical methods to the solution of practical problems; simple workshop formulae.

(*e*) *Geometry.*—Definitions, use of compass, protractor, and scale graduated in inches and in centimetres, graduating of scales, practice in drawing to scale, measurement of angles and lines, measurement of triangles, simple constructions.

(*f*) *Elementary Science.*—Measurement in metrical and English units of length, area, volume, and mass; laboratory practice in use of these units.

The Three States of Matter: Defined and explained; molecular theory; the mechanical powers, some of their more important simple applications; Pascal's Law, statement and verification and some of its more important applications; pressure of liquids; Archimedes' Principle; specific gravity, common methods of finding specific gravities of solids and liquids; the properties of gas as exhibited by air as a type; Boyle's Law, statement and verification; practical applications of air pressure, air pump, common pump, siphon, air brakes.

Nature and sources of heat; simple explanations of the effects of heat in expanding solids, liquids, and gases; meaning of temperature, as compared with the quantity of heat; thermometer.

(*g*) *History.*—A brief outline of Canadian History to 1840 and a more extended outline from 1840 to the present time, with emphasis on the industrial development of Canada and on inventions, discoveries, and their results; forms of civil goverment in Ontario and Canada; civic bodies and officials, their duties, and how they get their positions; the rights and duties of citizenship; great events of current history.

(*h*) *Geography.*—The principles of geography; the chief phenomena of air, earth and sky, an elementary study of the political, commercial and industrial geography of Europe and America, with special reference to the resources, industries, and commerce of the British Empire, Canada, and the United States.

The emphasis should be placed upon industrial or economic phenomena, upon the development of transportation and communication, the growth of municipalities, and civic organization. For the course in geography, books of travel and other supplementary reading, from the school or the Public Library, should be supplied; also, when practicable, exhibits of the products characteristic of the countries studied, and mounted photographs of famous places.

**Second Year**

(2) (*a*) *Composition, Grammar, and Spelling.*—The course of the first year continued and extended.

(*b*) *Literature.*—The course of the first year continued and extended.

(*c*) *Arithmetic.*—Additional problems in connection with the instruction in shop work, science, and drawing; enough accounting to enable the pupil to keep records of petty cash or stock-room accounts in a shop; the surface areas and volumes of prisms, pyramids, frustums, spheres, anchor rings, the use of Simpson's rules for areas and volumes of irregular figures.

This course in arithmetic is designed mainly for boys. The course for girls should consist of a review and an extension of the topics prescribed in the course for the first year with application to women's trades.

(*d*) *Algebra.*—Factoring, fractions, simple problems involving equations of one and two unknowns, indices, surds, the use of graphs in determining laws from data obtained by observation or experiments.

(*e*) *Geometry.*—Problems of construction, geometric loci, equality of triangles, parallel lines, properties of circles, similar figures, application to problems in mensuration and surveying, such as finding the area of a figure drawn to scale from data given in the field book.

(*f*) *Trigonometry.*—Definitions, ratios of angles found by means of squared paper and by use of trigonometrical tables; solution of right-angled triangles; simple problems in surveying and mechanics; shop trigonometry.

In the course in mathematics, free use should be made of mechanics' handbooks for formulae and tables.

(*h*) *Elementary Science.*—An experimental course as follows, related as far as practicable to men's industries:

Heat: Effects of heat on substances used for constructional purposes; specific, sensible, and latent heat, with practical applications; melting and boiling points; steam production and the properties of steam; conduction, convection, and radiation, and their applications to practical work; hot and cold water supply; methods of heating and ventilating.

Magnetism and Electricity: Laws of magnetic attraction and repulsion; polarity; magnetic induction; terrestrial magnetism; construction of simple voltaic cell; Ohm's Law with illustrations; decomposition of water by electricity; electromagnet; electric bell; telegraph; telephone; dynamo; heating and lighting effects of the current; motors.

Sound: Nature and propagation; pitch of sound; consonance and resonance; reflection of sound, echoes.

Light: Nature and propagation; simple experiments, illustrating the reflection and refraction of light; dispersion of light; colour of bodies.

Chemistry: Matter and energy; physical and chemical change; elements; compounds; mixtures, and solutions; acids and bases; hydrogen; oxygen; water, and air; conservation of mass; oxidation and reduction; the most important of the commercial combinations of sulphur, nitrogen, chlorine, carbon, such as sulphur dioxide, sulphur trioxide, sulphuric acid, ammonia, nitric acid, salt, hydrogen chloride, bleaching powder, coal, coke, graphite, carbon dioxide, carbon monoxide, sodium carbonate. Only simple necessary explanations of chemical theory should be given.

Formulae and equations may be used when found convenient, but involved explanations of these need not be made.

(*j*) *History.*—A very brief outline of British history to the Tudor Period; a brief outline to 1685; and a more extended outline from 1685 to the present time; special emphasis on the most important constitutional acts and the industrial development of Great Britain, and on inventions, discoveries, and their results; great events of current world history.

(*k*) *Geography.*—The course of the first year continued and extended, with special attention to the industrial geography of Canada. A special intensive study of the sources of supply of raw materials, and of the distribution of the manufactured product of one or more of the local industries.

## Course in Drawing

### First Year

**29.**—(1) (*a*) *Freehand Drawing and Design.*—Freehand drawing in outline and in light and shade, from models and casts, from natural objects, from machines, and from memory; lettering; freehand perspective, practically developed; elementary principles of design as applied to men's and women's trades. The course for girls should include a study of colour and colour harmony and design as applied to embroidery, trimmings for dresses, headwear, &c.

(*b*) *Mechanical Drawing.*—Use and care of drawing instruments; geometrical drawing; orthographic projection; elementary working drawings from models and sketches; dimensioning; drawing to a scale; tracing and blue-printing.

### Second Year

(2) (*a*) *Freehand Drawing and Design.*—The course of the first year continued and extended.

(*b*) *Mechanical Drawing.*—First year course, continued and extended; intersection and development of surfaces; sheet metal patterns; conic sections; isometric projection; perspective drawings developed from plans; working drawings of machine and architectural details to a scale, from pupils' own sketches; tracing and blue-printing; working drawings of the objects being constructed in the shops.

## Course in Materials

**30.**—(1) The study of materials in the day school classes for boys should include the growth, character, and uses of various woods, the methods of preparation and manufacture of other natural products useful to man, as, for example, cotton, linen, and wool; the various kinds of coal, oil, clay, building stone, concrete, mortar, and cement; metals used in the industries, methods of tempering and preserving steel; the composition and uses of brass, Babbitt metal, pewter, etc.

Simple explanations of the effects of heat, moist air, water, and common acids on materials used for constructional purposes; rusting, rotting, and the use of protective coverings on metal and wood; combustion of solid, liquid, and gaseous fuels, and their application to industrial purposes; simple explanations of the chemistry of the foregoing.

(2) The study of materials for girls should deal with the distribution, growth, preparation, processes, marketing, and manufacture of the leading textile fibres: cotton, wool, linen, silk; simple tests for the identification of these fibres either as adulterants or in their proper uses; a special study of fabrics and their uses, with continued work on other textile fibres; cost of materials; practical work in choice of materials; development in relation to the industries connected with textile manufacture; evolution of spinning and weaving and inventions connected with these; results of these inventions; a general study of natural and manufactured fibres as used in textile industries.

## Day Technical Schools

**31.**—The regular courses in the day technical schools and classes are open to students who have passed the High School Entrance examination.

**32.**—(1) Two types of courses are offered in these schools and classes.

(*a*) A Technical High School course designed to prepare students for the University examinations for admission to the Faculty of Applied Science and the Faculty of Household Science and, at the same time, to give them a substantial basis of experience in industrial and technical work related to the courses in these Faculties.

(*b*) Courses in the technical subjects directly related to industries.

(2) The requirements prescribed in Section 21 (1), (2), (3), (4), (5), under Day Industrial Schools apply to all courses. But instead of the industrial work prescribed in Section 21 (6), students in the technical day school classes may substitute, in whole or in part, approved courses in technical subjects such as applied mechanics, building construction, architecture, surveying, electricity, heat engines and power plant operation, electro-chemistry, metallurgy and mining, etc.

(3) Owing to the variety in the requirements of the industries of different sections of the Province, the details of the technical subjects named are not prescribed by the Department of Education. Advisory Industrial Committees are required to submit to the Minister for approval the details of proposed courses before they are put into operation.

**33.**—Fifty per cent. of the time devoted to instruction in the courses of the first and second years shall be given to the subjects prescribed in Section 21 (1), (2), (3), (4), and fifty per cent. to the subjects prescribed in Section 21 (5), and (6). With the Minister's approval the relative amount of time to be given to subjects on the academic side and to industrial or technical work may be varied to meet the needs of pupils in the courses of the third and fourth years.

### Day Art Schools

**34.**—No courses are prescribed for day art schools and classes, but a detailed syllabus of each regular or special course to be offered shall be submitted to the Minister for his approval.

### Part-time Co-operative Classes and Special Day Industrial Classes

**35.**—The subjects in which instruction may be offered and the plan of organization for the classes must necessarily be determined by the needs and conditions of the localities concerned. Any subject having a direct industrial or technical bearing may be included in such classes.

In each case, however, the plan of organization of any part-time course or special industrial course and the details of the instruction to be offered must be approved by the Minister.

### Evening Industrial, Technical, and Art Schools and Classes

**36.**—(1) Any course of instruction designed to meet the needs of those who are engaged in industry, or who propose to be engaged in industry, may be provided in these schools and classes. Such courses may include instruction in English, mathematics, science, and in the practical, theoretical, or technical work related to any trade or industry. The details of all proposed courses shall be submitted to the Minister for his approval.

(2) While the forms of instruction to be provided in evening school classes cannot be rigidly classified, the following general types may be distinguished:

(*a*) Classes for continuing general education.

The courses in these classes are designed to meet the needs of persons who are prevented from advancement in their particular line of work through lack of a satisfactory general education. The subjects most frequently sought are composition and the essentials of arithmetical calculations, including the fundamental rules, vulgar fractions and decimals with their applications to shop problems.

(*b*) Trade preparatory or trade changing classes.

These classes are designed for persons engaged in occupations of little promise, who desire to prepare themselves for more satisfactory callings. But the limitations of evening school instruction in this direction should be recognized. Evening schools, as usually constituted, do not offer facilities for preparing workers completely for new vocations; yet much can be done through preparatory instruction in evening schools to assist them in entering upon such vocations. As a rule, beginners above sixteen years of age should be advised to take up as learners or apprentices the new line of work at as early a date as possible and encouraged to enrol in evening classes for supplementary instruction.

(*c*) Trade extension classes.

The purpose of such classes is to supplement and to amplify the instruction which those engaged in a vocation are receiving from day to day in their employments. In some cases, the instruction is concerned with the more theoretical requirements of a trade, while the practical side of the work is acquired in the shops; in other cases, the evening schools furnish instruction of a practical character in such fundamental operations of a trade as the shop organized for production is not fitted to give; in others again, the evening schools offer apprentices or journeymen at work in some one department of a trade opportunities to perfect themselves in a wider range of operations in that trade.

(3) The length as well as the type of an evening school course should receive due consideration. In some cases, it has been found advisable to offer courses which extend throughout a year or even a succession of years. The Technical Schools at Toronto and Hamilton offer first, second, third and fourth year courses in a number of subjects and departments, and these courses are taken from year to year by students with the regularity that marks the progress of High School or University instruction. Other Technical Schools are beginning to offer extended courses of a similar nature. But the greater part of the work accomplished through evening school instruction has been done through shorter courses. Taking into account the needs of most communities, a short unit course designed to give instruction in some narrow, but well-defined field, is found to be, on the whole, the most effective means of evening school instruction. By arranging unit courses in sequence, it may be made possible to lead students from topic to topic throughout a series in an extended course when they could not be induced to enter a course planned on the basis of long and continuous attendance. The units of such a course should be so arranged as to deal with one specific topic at a time and the instruction in each topic should, as far as possible, be complete in so far as it goes. In this way, the knowledge of definite accomplishment becomes an incentive to further progress.

Appendix C contains suggestive unit courses in a variety of subjects for men and women.

## RELIGIOUS EXERCISES AND INSTRUCTION IN DAY INDUSTRIAL, TECHNICAL AND ART SCHOOLS

**37.**—(1) (*a*) Every day school shall be opened with the reading of the Scriptures and the repeating of the Lord's Prayer, and shall be closed with the Lord's Prayer or the prayers authorized by the Department of Education; but no pupil shall be required to take part in any religious exercises objected to by his parent or guardian.

(*b*) (i) In schools without suitable waiting-rooms, or other similar accommodation, if the parent or guardian demands the withdrawal of a pupil while the religious exercises are being held, such demand shall be complied with and the reading of the Scriptures shall be deferred in inclement weather until the closing.

(ii) To secure the observance of this regulation, the teacher, before commencing a religious exercise, shall allow the necessary interval to elapse during which the children or wards of those, if any, who have signified their objection, may retire.

(*c*) If the parent or guardian objects to his child or ward taking part in the religious exercises, but directs that he shall remain in the school-room during such exercises, the teacher shall permit him to do so, provided that he maintains decorous behaviour during the exercises.

(*d*) If, in virtue of his right to be absent from the religious exercises, any pupil does not enter the school-room till the close of the time allowed for religious exercises, such absence shall not be treated as an offence against the rules of the school.

(*e*) When a teacher claims to have conscientious scruples in regard to opening or closing school as herein prescribed, he shall notify the Advisory Industrial Committee to that effect in writing; and it shall then be the duty of the Advisory Industrial Committee to make such provision as it may deem expedient for the carrying out of the requirements of 1 (*a*) above.

(2) (*a*) The Scriptures shall be read daily and systematically; the parts to be read may be taken from the book of selections adopted by the Department for that purpose, or from the Bible, or from the list of the Selected Scripture Readings of the International Bible Reading Association, as the Advisory Industrial Committee by resolution may direct.

(*b*) An Advisory Industrial Committee may also order the reading of such parts by both pupils and teachers at the closing of the school, the repeating of the Ten Commandments at least once a week, and the memorization of passages selected by the Principal from the Bible.

(*c*) If the Advisory Industrial Committee does not pass the resolution provided for in (*a*) above, the Principal shall make the selection himself, and shall promptly notify the Advisory Industrial Committee of his action. Such action may be revised by the Advisory Industrial Committee at any time thereafter.

(3) (*a*) A clergyman of any denomination shall have the right, and it shall be lawful for the Advisory Industrial Committee to allow him, to give religious instruction to the pupils of his own church, in each schoolhouse, at least once a week, after the hour of closing the school in the afternoon.

(*b*) Under the same conditions, a clergyman, selected by the clergymen of any number of denominations, shall also have the right to give religious instruction to the pupils belonging to such denominations.

(*c*) If the clergymen of more than one denomination apply to give religious instruction in the same schoolhouse, where the number of class-rooms is insufficient for all at the same time, the Advisory Industrial Committee shall decide on what day of the week a room shall be at the disposal of the clergyman of each denomination, at the time above stated.

(4) Emblems of a denominational character shall not be exhibited in the school during regular school hours.

### GRADUATION DIPLOMAS

**38.**—(1) Graduation diplomas may be awarded by a School Board on the recommendation of the Advisory Committee under which the students concerned have received their instruction on condition that the principal has certified that their conduct and attendance have been satisfactory, and that they have completed satisfactorily a course or courses of at least three years in one or more of the departments of study under the control and management of the Advisory Committee granting the diplomas in question.

(2) Each graduation diploma shall specify the courses the holder has taken.

(3) The diplomas shall be signed by the chairman of the Board, the chairman of the Advisory Committee, and the principal of the school.

### INSPECTION

**39.**—(1) Subject to instructions from the Minister, the Director of Technical Education or his representative shall inspect each Industrial, Technical, and Art School and Department at least once each year.

(2) The powers of the Director or his representative in relation to the schools and departments under his charge are the same as those prescribed in High School Regulation 21 (1) (*a*) for the High School Inspectors in relation to the schools under their charge.

(3) On application to the Minister, the services of the Director or his representative will be available to Advisory Industrial Committees for the purposes of establishment and organization.

### TEXT=BOOKS

**40.**—(1) The text-books for the purely academic subjects shall be the same as those prescribed for the High Schools.

(2) The text-books for the Industrial, Technical and Art subjects, shall be those selected by the Principal and approved by the Minister. In Appendix B is given a list of books from which text and reference books in industrial, technical and art subjects may be selected.

### DISTRIBUTION OF THE LEGISLATIVE GRANTS

**41.**—When the accommodations, the equipment, the text-books, the qualifications of the staff, and the courses of study are satisfactory to the Minister, the annual Legislative grant for Day and Evening Industrial, Technical, and Art Schools shall be distributed in accordance with the following scheme:

**(1) Salaries:**

(*a*) A grant on salaries of the teaching staff approved by the Minister and calculated as follows on the total salaries of the said staff:

75 per cent. of the expenditure on salaries up to and including an expenditure of $2,000 and the following percentages on all expenditures on salaries above that amount;

66 2-3 per cent. of the expenditures above $2,000 and up to and including $5,000;

50 per cent. of the expenditures above $5,000 and up to and including $10,000;

33 1-3 per cent. of the expenditures above $10,000 and up to and including $15,000;

25 per cent. of the expenditures above $15,000.

(*b*) The expenditure for salaries of persons with qualifications approved by the Minister appointed to perform the duties specified in Section 11 (5) of the Industrial Education Act may be included as part of the legitimate expenditure for salaries.

**(2) Equipment:**

(*a*) Fifty per cent. of the cost of equipment especially provided in any year for Evening or Day Industrial, Technical, and Art Schools and approved by the Minister.

(*b*) Boards shall be reimbursed for expenditures on equipment purchased previous to September 1st, 1919, on the basis set forth in Regulation 22 (3) of the Regulations adopted in 1915; but

(*c*) A special grant not to exceed $20,000 may be paid on equipment purchased by a Board and approved by the Minister before October 31, 1919.

**(3) Buildings:**

(*a*) Fifty per cent. of the cost of buildings especially constructed for Day or Evening Industrial, Technical, and Art Schools and approved by the Minister. The value of the land shall not be considered as entering into the cost of any building. The value of buildings already erected for any other purpose, which are to be remodelled or added to, shall not be considered as entering into the cost of any building.

(*b*) Where an Industrial, Technical, or Art School is established as a department of a Continuation School, a High School, or a Collegiate Institute, the grant of fifty per cent. will apply only to the cost of that part of the building which is to be used exclusively for industrial, technical, or art education. But, with the approval of the Minister, a grant of twenty-five per cent. will be paid on the cost of an assembly hall, a gymnasium, a library, or laboratories used in common by pupils of the Industrial, Technical, or Art School and the pupils of the Continuation School, High School, or Collegiate Institute occupying the same building.

**(4) Equipment and Buildings for Schools in the Districts:**

In the Districts the yearly grant provided for equipment in (2) and for buildings in (3) above, shall be seventy-five per cent. of the cost in each case.

## CONTINGENCY OF GRANTS

**42.**—If the amount voted by the Legislature is insufficient to pay in full the apportionments under the foregoing scheme, or, if there is a balance left over after payment in full, the Minister may make a pro rata reduction or increase.

## ACCOUNTS

**43.**—The receipts and expenditures on account of the Industrial, Technical and Art Schools shall be kept separate from those for other school purposes, and shall be separately reported to the Minister.

## APPENDICES

Appendix A contains a list of reference books which may be found useful in day and evening classes.

For the information of Boards and Advisory Industrial Committees the various acts which control or affect the organization of industrial and technical schools are printed in Appendix B. This Appendix contains:

(1) The Industrial Education Act.

(2) The Adolescent School Attendance Act, which makes provision for compulsory attendance under certain conditions through adolescence.

(3) The Technical Education Act of 1919 passed by the Dominion Government by which grants are made to the Provinces to assist them in making provision for industrial and technical education.

In Appendix C will be found suggestive unit part-time and evening school courses for men and women. Through the courtesy of the United States Federal Board for Vocational Education these courses have been reprinted from Bulletins 18 and 28 issued by the Board.

# APPENDIX A

## LIST OF SUITABLE TEXT-BOOKS AND REFERENCE BOOKS

1. *Mathematics.*

Syllabus of Arithmetic and Mensuration by the Instructors,.....
Toronto Technical School Press.

Vocational Mathematics, by Dooley..... $1 00
D. C. Heath & Co., Boston.

A suitable elementary text-book in general shop arithmetic. It deals with the problems of all the common trades, is clear and concise as well as comprehensive.

Shop Mathematics: Part I, Shop Arithmetic, by Norris & Smith..... 1 50

A practical book giving the essentials of arithmetic in a practical setting and also the arithmetic of elementary mechanics.

Part II, Advanced Shop Mathematics, by Norris & Craig..... 1 50

This book presents such of the principles of algebra, geometry, trigonometry, and logarithms as have been found to be of practical value in the shop.

McGraw-Hill Book Co., New York City.

Shop Mathematics, by Holton, 1910..... 1 25
The Taylor-Holden Co., Springfield, Mass.

Deals primarily with the mathematics of the machine shop and the steam engine and is closely related to the use of standard mechanics' handbooks.

Shop Problems in Mathematics, by Breckenridge, Mersereau, & Moore.. 1 00
Ginn & Co., Boston.

Includes a review of essential operations, short methods, use of slide rule and practical problems in the mathematics of wood-working and metal working shops.

Shop Mechanics and Mathematics, by Johnson..... 1 00
John Wiley & Sons, Limited, New York City.

Contains valuable notes and suggestive problems in the simpler branches of applied mechanics. One chapter is devoted to materials. Rules and formulae are illustrated by practical examples worked out in detail.

Practical Mathematics and Geometry, by Bates & Charlesworth

Part I, Preliminary Course..... 1 50

Part II, Advanced Course..... 1 50

This is essentially a text-book designed to meet the needs of students who are preparing for examinations under the Board of Education, London, England. It covers arithmetic, algebra, and geometry as needed in scientific and technical subjects.

The Slide Rule, by Clark..... 60
Technical Supply Co., Scranton, Pa.

Industrial Arithmetic for Vocational Schools, by Gardner & Murtland.... 60
D. C. Heath & Co., Boston.

Constructive Text-Book of Practical Mathematics, by Marsh.....

Volume I, Industrial Mathematics..... 2 00

This volume will be found the most generally useful. It covers the essentials of arithmetic, mathematics of elementary mechanics, solution of an equation, logarithms, use of the slide rule, the solution of a triangle, and a series of useful reference tables.

Volume II, Technical Algebra ..... $2 00
Volume III, Technical Geometry ..... 1 25
Volume IV, Technical Trigonometry ..... 1 50

John Wiley & Sons, New York City.

Practical Mathematics, by Palmer

Part I, Arithmetic with Applications..... 75
Part II, Geometry with Applications..... 75
Part III, Algebra with Applications..... 75
Part IV, Trigonometry and Logarithms..... 75

McGraw-Hill Book Co., New York City.

This series of small practical books is prepared primarily for the use of adult students working in the trades and industries. While the problems dealt with are given a practical setting little space is given to elementary mechanics.

Workshop Mathematics: Parts I and II, by Frank Castle.....Each 35

Macmillan Co., Toronto.

These two small books contain a large number of carefully graduated exercises of a practical kind in workshop arithmetic and workshop calculations involving algebra, geometry, use of logarithms, and of the slide rule.

Logarithmic and other Tables for Schools, by Castle..... 15

Macmillan Co., Toronto.

Suitable and convenient for such students as may need to use such tables.

Mathematics for Machinists, by Burnham..... 1 25

John Wiley & Sons, New York City.

This book gives in elementary form an explanation of the calculations most frequently used in machine shop work. The meaning of the formulae used is made clear.

Printers' Arithmetic, by Woodfield..... 50

C. L. Woodfield, 536 S. Clark St., Chicago.

Deals with the elements in the printing trade that are essentially mathematical and with simple business problems involving commercial transactions related to the printing business.

Instructors' Syllabus in Geometry.....

Toronto Technical School Press.

Applied Mathematics, by Cobb..... 1 80

Ginn & Co., Boston.

This book represents an attempt to relate arithmetic, algebra, geometry, and trigonometry to each other and to connect them all with the practical work of the shops and laboratories.

Practical Mathematics, by Saxelby..... 2 25

Longmans Green & Co., New York.

A text-book prepared with the needs of the technical students in mind. It presupposes either previous or concurrent practical experience in the laboratories and shops.

Elementary Practical Mathematics, by Castle..... $1 50
Macmillan Co., Toronto.

An elementary text-book covering the essentials and designed to meet the needs of citizens and students in industrial classes. Fourteen hundred problems are given, each with its practical setting.

Woodwork Exercises Treated Mathematically, by Drury..... 30
Geo. Bell & Sons, Limited, London.

A series of exercises which link up practical mathematics with woodwork, including a complete course in mensuration. It is planned especially for day and evening industrial and technical classes.

Plane Surveying, by Carhart..... 1 80
Ginn & Co., Boston.

A text-book illustrating and describing the instruments employed, their adjustments, and uses; exemplifying the best methods of solving the common problems occurring in practice as well as furnishing solutions for many special cases. Published in 1887.

Field Engineering, by Searles..... 3 00
John Wiley & Sons, New York.

A hand-book presenting the theory and practice of railroad surveying, location, and construction. It is designed for use in the class-room, the field or the office, and contains a large number of useful tables.

Plane and Spherical Trigonometry, by Palmer & Leigh..... 1 50
McGraw-Hill Book Co., New York.

A text-book designed especially for students in technical and engineering schools.

Arithmetic for Carpenters and Builders, by Dale..... 1 25
John Wiley & Sons, New York City.

Presents the subject of arithmetic as it is needed in the daily work of the carpenter and builder. It contains two chapters on the use of the steel square.

Mining & Other Tables, by Hatch & Valentine..... 1 40
Macmillan Co., Toronto.

Plane Surveying, by Tracy..... 2 70
John Wiley & Sons, New York City.

Practical Household Arithmetic of Daily Life.....
Education Supply Co.,

## 2. *Mechanical Drawing and Machine Drawing.*

✓ Machine Sketching and Drawing—Authorized by the Minister of Education, Ontario ..... ..... 37
The Copp Clark Co., Limited, Toronto.

Shop Sketching, by Woolley & Meredith..... 1 00
The McGraw-Hill Book Co., New York City.

This book presents the instruction papers prepared and used by the Extension Division of the University of Wisconsin in its work with apprentices and the older men in the shops. The end sought is the ability on the part of the student to make simple sketches and to read with facility and accuracy the drawings that come to him in his daily shop experience.

Mechanical Drawing for Trade Schools, by Leeds..... $2 00
D. Van Nostrand Co., New York City.
A series of sixty-one lessons with plates giving a grounding in the essentials of mechanical drawing as required in the various machinery trades. A helpful and suggestive book.

Elementary Mechanical Drawing, by Weick..... 1 75
McGraw-Hill Book Co., New York City.
An elementary text-book for class use on the modern conventions, theory, and practice of mechanical drawing as needed for general practice in a drafting office.

Machine Construction and Drawing, by Cryer & Jordan..... 3s. 6d.
John Heywood, London.
A concise, clear, and well arranged text-book.

Machine Drawing and Design for Beginners, by Spooner..... $1 25
Longmans, Green & Co., London.
A standard text-book for beginners in machine design.

Machine Design, by Reid & Reid..... 3 00
John Wiley & Sons, New York City.

Manual of Machine Drawing and Design, by Low & Bevis..... 1 75
Longmans, Green & Co., London.

Machine Design, Construction and Drawing, by Spooner..... 3 50
Longmans, Green & Co., London.
A useful text-book for the teachers of the more advanced classes.

### 3. *Architectural Drawing and Building Construction.*

Architectural Drawing, by Edminster..... $2 00
C. F. Edminster, Pratt Institute, Brooklyn, N.Y.
This is an elementary text-book well illustrated by the use of plates.

Structural Drawing, by Edminster..... 2 50
C. F. Edminster, Pratt Institute, Brooklyn, N.Y.
This is an elementary text-book illustrated by the use of plates.

Practical Lessons in Architectural Drawing, by Tuthill..... 2 50
W. T. Comstock, New York City.

Building Construction and Drawing, by Mitchell:
Elementary Course ..... 3s.
Advanced Course ..... 6s.
B. T. Batsford, London, England.

Architectural Perspective, by Wright..... $2 50
W. T. Comstock, New York City.

Architectural Compositions, by Robinson..... 2 50
D. Van Nostrand Co.

House Planning, by Osborne..... 1 00
W. T. Comstock, New York City.

Details of Building Construction, by Martin..... 2 00
Bates & Guild, Boston, Mass.

Building Construction and Superintendence, Vols. I, II, & III, by Kidder. 8 00
W. T. Comstock, New York City.

Architectural Drafting, by Greenberg & Howe..... 1 50
John Wiley & Sons, New York City.

Details of Building Construction, by Martin..... $2 00
Bates & Guild Co., Boston.
A series of plates, each with explanatory notes, presenting only such details, principally in wood, as are in common use in domestic architecture and in smaller public buildings. The subject of framing is omitted.

Notes on the Art of House-Planning, by Osborne..... 2 00
W. T. Comstock, New York City.
Presents the basis of the subject in simple form.

Handbook of Information Relating to Structural Steel, by Thackray..... 1 25
Cambria Steel Co., Johnstown, Pa.
The eleventh edition of this handbook was issued in 1916. It contains useful tables, rules, data, and formulae for the use of engineers, architects, builders, and mechanics. It includes also matter relating to reinforced concrete and fire-proofing materials.

### 4. *Fine and Applied Art.*

Apollo, by Reinach ..... 1 50
Charles Scribner & Sons, New York City.
An illustrated manual of the history of art throughout the ages.

Prang's Teacher's Manual of Art Instruction (8 parts)..... 6 00
Prang Educational Co., Boston.
An elementary course in art divided into eight units corresponding to the eight years of elementary school work.

Art Education for High Schools..... 1 25
Prang Educational Co., Boston.
A very helpful and suggestive book on art instruction in the High Schools. It follows very suitably the course outlined in the Manual of Art Instruction published by the same firm.

New Method of Education, by Tadd..... 2 00
Orange Judd Co., Chicago.

Theory and Practice of Design, by Tuckson..... 2 25
Chapman & Hill, London.

Line and Form, by Crane..... 1 50
Geo. Bell & Son, London.
This book is based on a series of lectures on the practical work of an Art School and contains many illustrative plates.

Plant Form and Design, by Midgley & Lilley..... $2 50
Chapman & Hill, London.
A book intended for students, which shows how plant forms may be simplified and converted into ornament and used in design for simple space filling, and for such work as stencilling, wall-paper, and textile designing.

Nature in Ornament, by Day ..... 2 00
B. T. Batsford, London.

Pattern Design, by Day ..... 2 25
B. T. Batsford, London.
A book for students, which treats in a judicial way the anatomy, planning and evolution of repeated ornament.

The Principles of Design, by Batchelder ..... $3 00
Inland Printing Co., Chicago.

In this book the simple underlying principles of line and area composition are defined, and a series or related exercises are given to illustrate each principle.

New Methods in Education, by Tadd ..... 2 00
Orange Judd Co., Chicago.

An abridgement of Mr. Tadd's original and complete work, issued for the special use of teachers and students. It is based on twenty years' experience at the Public Industrial Art School, Philadelphia.

Letters and Lettering, by Brown ..... 2 00
Bates and Guild.

This book presents a varied collection of alphabets of standard form, arranged for convenient use. The application of classic and mediæval letters to modern usages is also suggested, by showing modern designs in which similar forms are employed.

Ornament and Its Application, by Day ..... 2 25
B. T. Batsford, London.

A book for students, treating in a practical way the relation of design to materials, tools, and methods of work.

Modelling. A Guide for Teachers and Students—3 vols., by Lanteri ..... 3 75
Chapman & Hill, London.

Manual of Historic Ornament, by Glazier ..... 1 50
B. T. Batsford, London.

Colour Study, by Cross ..... 60
Ginn & Co., Boston.

5. *Heat and Steam.*

Steam and Other Engines, by Dunean ..... 1 00
Macmillan Co., Toronto.

This text-book provides students with explanations of the elementary principles of science applicable to heat engines, and gives a description of the essential structural details of typical engines.

Steam, by Ripper ..... 50
Longmans, Green & Co., London.

This is an introductory text-book for the use of students and especially for those who already have some practical experience in the use of steam machinery.

Steam Engineering, by Pullen ..... 1 50
Scientific Publishing Co., Manchester.

A text-book, including the principal experimental work, together with requisite descriptive matter. Many practical problems are worked out in detail and a series of exercises for homework are given.

Notes on Heating and Ventilating, by Allen ..... 2 00
Domestic Engineering Co., Chicago.

A book that is written primarily for the steam-fitter and the designer of heating systems. It presupposes a knowledge of the construction and operation of the simpler forms of heating systems.

Heating and Ventilation, by Carpenter ..... 4 00
Wiley & Sons, New York City.

Modern Examination of Steam Engineers, by Wakeman ..... $1 60
American Industrial Publishing Co., Bridgeport, Conn.
Treats in a plain and practical way a great variety of subjects pertaining to the engine and boiler-rooms, a knowledge of which is necessary for those who desire to become competent steam engineers.

Practical Guide for Firemen, by Wakeman ..... 50
W. H. Wakeman, New Haven, Conn.
Practical hints and suggestions concerning the safe and economical management of steam boilers.

Operating a Steam Plant, by Wakeman .....
American Industrial Publishing Co., Bridgeport, Conn.
Gives useful information on the erection and safe operation of steam boilers and engines.

### 6. *Electricity.*

Preliminary Practical Magnetism and Electricity, by Henderson ..... 30
Longmans, Green & Co., London.
A small text-book for organized science schools and evening elementary science classes. A series of laboratory exercises with accompanying instructions, hints to teachers in carrying out the different experiments, along with a list of necessary apparatus, are included in the appendices.

The Practical Testing of Dynamos and Motors. Smith..... 1 25
Scientific Publishing Co., Manchester.
An elementary introduction to the study of the testing of continuous current dynamo machinery. The use of mathematics has been avoided as far as possible, results and inferences being discussed in connection with curves obtained in the experiments.

Practical Alternating Currents and Alternating Current Testing, by Smith 1 25
Scientific Publishing Co., Manchester.
Deals, in an elementary and practical manner, with the principles of alternating currents and alternating current machinery. It is designed to meet the needs of students and young engineers.

Alternating Current Engineering, by Raymond ..... 2 50
D. Van Nostrand, New York City.
A general treatise on alternating current engineering, presented in a practical way, without complex methods of explanation and free from any matters not bearing directly on purely engineering work.

Elements of Electricity, by Timbie ..... 1 25
Wiley & Sons, New York City.

Electrotechnics, by Henderson ..... 3s. 6d.
Longmans, Green & Co., London.

Elementary Electricity and Magnetism, by Jackson & Jackson..... $1 50
Macmillan Co., Toronto.

Lessons in Practical Electricity, by Swoope ..... 2 00
D. Van Nostrand Co., New York City.

Electricity, by Ahse ..... 2 00
D. Van Nostrand Co., New York City.

Practical Management of Dynamos and Motors, by Croker & Wheeler.... 1 00
D. Van Nostrand Co., New York City.

Problems in Electricity, by Hooper & Wells ..... $1 25
Ginn & Co., Boston.
Elements of Electrical Engineering, by Sewell ..... 5s.
Crosby, Lockwood & Son, London.
Alternating Currents ..... $5 00
International Text-Book Co., Scranton, Pa.
Illumination and Photometry, by Wickenden ..... 2 00
McGraw-Hill Book Co., New York City.

### 7. *Chemistry.*

Principles of Metallurgy, by Hiorns ..... 2 00
Published in August, 1895. Aims to give, in a simple and succinct form, the views of modern metallurgists, and the methods of procedure in the extraction of various metals from their ores, with the uses and properties of same when isolated.
Outlines of Industrial Chemistry, by Thorp ..... 3 20
Macmillan Co., Toronto.
An elementary text-book on industrial chemistry in which is described, briefly and without excess of detail, the more important industrial chemical processes.
An Elementary Study of Chemistry, by McPherson & Henderson ..... 1 20
Ginn & Co., Boston.
Theoretical Organic Chemistry, by Cohen ..... 3 50
Macmillan Co., Toronto.
Manual of Chemical Analysis, by Newth ..... 1 75
Longmans, Green & Co., London.

### 8. *Mechanics.*

A Text-Book of Engineering for Secondary Schools, by King ..... 4 00
The Friedenwald Co., Baltimore.
A text-book designed primarily for students in their third and fourth year of a secondary technical school course. It presupposes two years of work of a preparatory nature along engineering lines.
Mechanical Engineers' Pocket Book, by Kent ..... 5 00
Wiley & Sons, New York City.
A reference book of rules, tables, data and formulae for the use of engineers, mechanics, and students. First published in 1895, issued eighth edition Sept., 1910.

### 9. *Woodworking Trades.*

Carpentry, by Townsend ..... 1 00
American School of Correspondence, Chicago, Ill.
A practical treatise of simple building construction, including framing, roof construction, general carpentry work and the exterior and interior finish of buildings.

Cabinet Making, by Rudd ..... $1 50
Grand Rapids Furniture Record Co., Grand Rapids, Mich.
This book is written to meet the needs of the cabinet maker, the manufacturer of household furniture, as well as of teachers of cabinet making in manual training, technical and trade schools. In addition to the essential construction problems it contains chapters on factory planning, simple cost system, timber, timber calculations, and seasoning.

Modern Cabinet Work—Furniture and Ornaments, by Wells & Hooper..... 4 50
B. T. Batsford, London.
An account of the theory and practice in the production of all kinds of cabinet work and furniture, with chapters on the growth and progress of design and construction. Illustrated by over one thousand workshop drawings, photographs, and original designs.

Handwork in Wood, by Noyes ..... 2 00
Manual Arts Press, Peoria, Ill.
This book is intended primarily, for teachers of woodwork and is a helpful elementary text on the subject.

Carpentry ..... 5 00
International Text-Book Co., Scranton, Pa.

Carpentry—Vol. II of Building Construction, by Kidder .....
Wm. T. Comstock, New York City

Furniture, by Crawshaw ..... 1 25
Manual Arts Press, Peoria, Ill.

The Nation's Treasurer, Drawing from Furniture, etc., Bam & Shopland..
Simpkins, Marshall, Etc., London.

Patternmaking ..... 5 00
International Text-Book Co.

Patternmaking, by Purfield ..... 1 50
Manual Arts Press, Peoria, Ill.

## 10. *Metal Working Trades.*

Foundry Work, by Stimpson ..... 1 00
American School of Correspondence, Chicago, Ill.
A practical work, showing modern methods of moulding and casting in iron, bronze, steel, and other materials, including many helpful hints on shop equipment and shop management.

Forging, by Bacon ..... 1 00
American School of Correspondence, Chicago, Ill.
A manual of practical instruction in the hammering, working, forming, and tempering of wrought iron, machine steel, tool steel, including details regarding the modern process of electric welding.

Moulder's Text Book, by West ..... 1 50
Wiley & Sons, New York City.

Foundry Work ..... 5 00
International Text-Book Co.

Notes for Forge Shop Practice, by Littlefield.....
Taylor-Holden Co., Springfield, Mass.

Machine Shop Tools, by Leonard ..... 4 00
Wiley & Sons, New York City.

Machine Shop Practice, by Kaup ..... $1 50
Wiley & Sons, New York City.
American Machininst Handbook ..... 3 00
McGraw-Hill Book Co., New York City.
A Handbook for Apprenticed Machinists, by Oscar J. Beale ..... 50
Brown & Shape Mfg. Co.
Elements of Machine Work, by R. H. Smith ..... 1 60
Industrial Educational Book Co.

11. *Hygiene, Physiology, and Home Nursing.*

Text-Book of Nursing, by Weeks Shaw ..... 1 58
D. Appleton & Co., New York.
Written primarily for those studying to be professional nurses. Helpful and suggestive for amateurs also.
Practical Points on Nursing, by Stoney ..... 1 58
Saunders Co.
Physiology and Hygiene, by Reynolds ..... 75
Macmillan Co., Toronto.
Suitable for second year students.
First Book of Physiology and Hygiene, by Cathcart ..... 50
Macmillan Co., Toronto.
Suitable for first year students.
Home Nursing, by Harrison ..... 1 00
Macmillan Co., Toronto.
First Aid to the Injured, by Cantlie .....
St. John's Ambulance Association, Toronto.
Hints and Helps for Home Nursing and Hygiene, by Cosgrave .....
St. John's Ambulance Association, Toronto.
Physiology, by Kirke ..... 2 70
P. Blackiston, Son & Co.
Physiology, by Kimber ..... 2 50
Macmillan Co., Toronto.
Practical Hygiene, by Harrington ..... 4 25
Leh Bros., Philadelphia, Pa.
Practical Hygiene, by Parke ..... 2 70
P. Blackiston, Son & Co.
Hygiene of Transmissible Diseases, by Abbott ..... 3 00
Saunders & Co.
Infection and Immunity, by Sternberg ..... 1 50
Pitman Co.

12. *Food and Dietetics.*

Chemistry of Food and Nutrition, by Sherman ..... 1 50
Macmillan Co., Toronto.
A reference book for teachers. Treats food chiefly in its nutritive relations. Has recent information on food requirements for persons in different kinds of work.
The Newer Knowledge of Nutrition, 1919, by McCollum ..... 1 50
Macmillan Co., Toronto.
Recent research work, including effect of vitornines.

Source, Chemistry, and the Use of Food Products, by Bailey..... $1 75
P. Blackiston, Son & Co.
A reference book for either student or teacher.

Foods and Household Management, by Kinne and Cooley, 1916 ..... 1 75
Macmillan Co., Toronto.
One of the best books that may be given to students as a text. Includes cost and purchasing of foods.

The Building and Care of the Body, by Willard, 1910 ..... 50
Macmillan Co., Toronto.
An elementary text-book for the younger pupils.

Food Products, by Sherman, 1914 ..... 2 00
Macmillan Co., Toronto.
Production and manufacture of foods, suitable for study by High School pupils.

Domestic Science, by Bailey..... 1 00
Webb Publishing Co., St. Paul.
An outline of work. Full of good suggestions. May be used as text-book by pupils.

Food Materials and their Adulterations, by Richards ..... 1 00
Whitcomb and Barrow.

Diet in Health and Disease, by Friedenwald and Ruhrab ..... 4 00
W. B. Saunders

Care and Feeding of Children, by Holt ..... 75
D. Appleton & Co., New York City.

Boston Cooking School Cook Book, by Farmer..... 2 00
McClelland, Goodchild & Stewart.

Food and Dietetics, by Hutchison ..... 3 00
Wm. Wood & Co., New York City.
A standard and comprehensive text-book for teachers and senior students.

The School Kitchen, by Lincoln ..... 60
Little, Brown & Co.

## 13. *Bacteriology.*

Technical Mycology, by Lafar ..... 1 50
Griffin & Co., London.
This is a practical handbook on fermentation and fermentative processes for the use of analysts, technical and agricultural chemists, pharmacists, and those interested in industries that are dependent on fermentation.

Disinfection and Disinfectants, by Rosenan ..... 2 00
P. Blackiston, Son & Co.
A practical guide book for sanitarians, health, and quarantine officers.

Household Foes, by Ravenhill ..... 75
McClelland, Goodchild & Stewart.
A readable book on micro-organisms in the home, for either elementary or secondary school pupils.

Bacteria Yeasts and Moulds, by Conn ..... $1 00
Ginn & Co., Boston.
A reference book for teachers.
Bacteria in Milk and its Products, by Conn ..... 1 00
Designed for the use of students in dairying, and for all others concerned in the handling of milk, butter and cheese.

### 14. *Household Management*

Care of a House, by Clark ..... 1 50
Macmillan Co., Toronto.
Food Products of the World, by Green ..... 1 00
Pitman.
Good Housekeeping Magazine .....Per year 2 00
The New Housekeeping, by Frederick ..... 1 00
Musson Book Co.
Laundering, by Balderson ..... 1 25
Balderston, Philadelphia.
Laundry methods and treatment of different materials, in removal of stains, soaps and cleansing solutions.
Interior Decoration, by Frank A. Parson..... 3 00
Doubleday, Page Co.
Principles of line and colour applied to rooms.

### 15. *Textiles and Dressmaking.*

Textiles, by Woolman, 1915 ..... 2 00
Macmillan Co., Toronto.
A handbook for the student and the consumer. Good for High School pupils.
Household Textiles, by Gibbs, 1913 ..... 1 13
Whitcomb and Barrow.
A reliable book, one of the best.
Textile Fibres, by Matthews, 1916 ..... 4 00
John Wiley & Sons, New York City.
A text-book on the fibres, giving a full account of the properties.
Sewing and Textiles, by Turner, 1917 ..... 1 75
D. Appleton & Co., New York.
Text-book for junior High School classes.
Clothing for Women, by Baldt, 1916 .....
Lippincott.
A study of materials, outlines in sewing and dressmaking. Good for High School students.
Scribner's
Dressmaking, by Fales, 1916.....
History of Costumes, Textiles, and Dressmaking .....
Textiles, by Nystrom, 1916..... 1 25
D. Appleton & Co., New York.
A recent book for home-makers, educational institutions, and the general public. A very good book.

Colour in Everyday Life, by Weinberg ..... $2 00
Lippincott.
A book on colour, related to clothes and house furnishings. Excellent.

A Sewing Course, by Woolman ..... 1 50
Fernald.
Plain sewing stitches, forms, and uses.

16. *Marketing.*

Food Products of the World, by Green ..... 1 00
Pitman.

The World's Commercial Products, by Green ..... 4 00
Pitman.

Food Materials and their Adulterations, by Richards ..... 1 00
Whitcomb & Barrow.

17. *Millinery.*

The Art of Millinery, by Yusuf ..... 2 00
The Millinery Trade Publishing Co., 13 Astor Place, New York City.

18. *Industrial History and Geography.*

The Story of English Industry and Trade, by Burrows ..... 40
A. & C. Black, Limited, London.

An Introduction to English Industrial History, by Allsopp ..... 2s.
G. Bell & Sons.

Tillage, Trade & Invention, by Warner ..... 2s.
Blackie & Son.

Landmarks in English Industrial History, by Warner ..... 5s.
Blackie & Son.

Industrial History of England, by Gibbons. 7th Edition ..... $2 75
Methuen & Co.

The United Kingdom, by Robb ..... 40
Blackie & Son.

The Growth of the British Empire, by Kerr ..... 50
Longmans, Green & Co., London.

Extracts Relating to Mediæval Masters, etc., by Irwin .....
McDonald & Evans.

The Guilds and Companies of London, by Unwin ..... 1 75
Methuen & Co.

Town Life in the Fifteenth Century, by Green ..... 4 00
Macmillan Co., Toronto.

The United States Federal Board for Vocational Education issues from time to time valuable Bulletins dealing with various subjects connected with vocational education. These Bulletins may be obtained free upon application. All communications should be addressed to the Federal Board for Vocational Education, Washington, D. C.

The following is a list of Bulletins issued to date:

## PUBLICATIONS OF THE FEDERAL BOARD FOR VOCATIONAL EDUCATION

Annual Report.

The Vocational Summary, published monthly by the Federal Board for Vocational Education (Vol. 1, No. 1, May, 1918).

Bulletin No. 1. Statement of Policies.

*Bulletin No. 2. Training Conscripted Men for Service as Radio and Buzzer Operators in the United States Army (International Code).

Bulletin No. 3. Emergency Training in Shipbuilding—Evening and Part-time Classes for Shipyard workers.

*Bulletin No. 4. Mechanical and Technical Training for Conscripted Men (Air-Division, U.S. Signal Corps).

Bulletin No. 5. (Re-education Series No. 1.) Vocational Rehabilitation of Disabled Soldiers and Sailors. (Also printed as S. Doc. 166.)

Bulletin No. 6. (Re-education Series No. 2.) Training of Teachers for Occupational Therapy for the Rehabilitation of Disabled Soldiers and Sailors. (Also printed as S. Doc. 167.)

*Bulletin No. 7. Emergency War Training for Motor-truck Drivers and Chauffeurs.

*Bulletin No. 8. Emergency War Training for Machine-shop Occupations, Blacksmithing, Sheet-Metal Working, and Pipe Fitting.

*Bulletin No. 9. Emergency War Training for Electricians, Telephone Repairmen, Linemen, and Cable Splicers.

*Bulletin No. 10. Emergency War Training for Gas-engine, Motor-car, and Motorcycle Repairmen.

*Bulletin No. 11. Emergency War Training for Oxy-acetylene Welders.

*Bulletin No. 12. Emergency War Training for Airplane Mechanics—Engine Repairmen, Woodworkers, Riggers, and Sheet-metal Workers.

Bulletin No. 13. (Agricultural Series No. 1.) Agricultural Education—Organization and Administration.

Bulletin No. 14. (Agricultural Series No. 2.) Reference Material for Vocational Agricultural Instruction.

Bulletin No. 15. (Re-education Series No. 3.) The Evolution of National Systems of Vocational re-education for Disabled Soldiers and Sailors.

*Bulletin No. 16. Emergency War Training for Radio Mechanics and Radio Operators.

Bulletin No. 17. (Trade and Industrial Series No. 1.) Trade and Industrial Education—Organization and Administration.

Bulletin No. 18. (Trade and Industrial Series No. 2.) Evening Industrial Schools.

Bulletin No. 19. (Trade and Industrial Series No. 3.) Part-time Trade and Industrial Education.

Bulletin No. 20. (Trade and Industrial Series No. 4) Buildings and Equipment for Schools and Classes in Trade and Industrial Subjects.

Bulletin No. 21. (Agricultural Series No. 3.) The Home Project as a Phase of Vocational Agricultural Education.

Bulletin No. 22. (Commercial Education Series No. 1.) Retail Selling.

Bulletin No. 23. (Home Economics Series No. 1.) Clothing for the Family.

Bulletin No. 24. (Commericial Education Series No 4.) Vocational Education for Foreign Trade and Shipping.

Bulletin No. 25. (Re-education Series No. 4.) Ward Occupations.

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*** Emergency war training for conscripted and enlisted men.**

Bulletin No. 26. (Agricultural Series No. 4.) Agricultural Education—Some Problems in State Supervision.

Bulletin No. 27. (Agricultural Series No. 5.) The Training of Teachers of Vocational Agriculture.

Bulletin No. 28. (Home Economics Series No. 2.) Home Economics Education —Organization and Administration.

Bulletin No. 29. (Re-education Series No. 5.) Treatment and Training for the Tuberculous.

Bulletin No. 30. (Trade and Industrial Series No. 5.) Evening and Part-time Schools in the Textile Industry of the Southern States.

# APPENDIX B

## I. INDUSTRIAL EDUCATION ACT, 1915

**1.** This Act may be cited as *The Industrial Education Act.* 3-4 Geo. V. c. 73, s. 1.

**2.** In this Act,

(*a*) "Board" shall mean and include a board of education, and a board of high school trustees;

(*b*) "Minister" shall mean Minister of Education;

(*c*) "Regulations" shall mean regulations made under the authority of *The Department of Education Act* or of this Act. 3-4 Geo. V. c. 73, s. 2.

**3.** This Act shall apply to all art, industrial and technical schools and courses, heretofore established under Acts of this Legislature respecting high schools and technical schools and in operation at the time of the passing of this Act; to the art, industrial or technical schools and courses established under this Act; and to agricultural and commercial high schools and high school courses heretofore or hereafter established under the Regulations. 3-4 Geo. V. c. 73, s. 3.

### DAY

**4.** With the approval of the Minister a high school board or a board of education of any city, town or village, may provide for duly admitted pupils in the following classes of schools:

#### General Industrial

(*a*) General industrial schools and courses for instruction in such subjects as may form a basal preparation for the trades, including work-shop practice, with correlated drawing, English, practical mathematics and science, and the essential subjects of a good general education.

#### Special Industrial

(*b*) Special industrial schools and courses for instruction in the theoretical and practical work of particular trades carried on in the city, town or village, and, when deemed desirable, in the essential subjects of a good general education.

#### Technical

(*c*) Technical high schools and high school courses for instruction for minor directive positions in industrial establishments.

#### Co-operative Industrial

(*d*) Part-time co-operative industrial courses in which, under such conditions as may be agreed upon between the employer and the advisory industrial committee, apprentices, whether articled or not, employed in the work-shops may receive in the day schools instruction bearing upon their trades; and pupils attending the day schools may receive practical instruction in the work-shops.

**Art**

(*e*) Schools and courses for instruction in the fine and applied arts.

**EVENING**

(*f*) Industrial, technical and art evening schools in which workmen and workwomen employed during the day may receive theoretical and practical instruction in their trades or callings.

**Admission of Pupils**

**5.**—(1) Pupils duly admitted under the Regulations to a high school may be admitted to a technical high school or high school course.

**Industrial Schools**

(2) Subject to the Regulations and on the report of the principal, approved by the advisory industrial committee, pupils of at least the standing of the fourth form of the public and separate schools may be admitted to a general or special industrial school or part-time co-operative industrial course or a school or course for instruction in the fine and applied arts.

**Admission of Workmen and Workwomen**

(3) Workmen or workwomen employed during the day may be admitted to an industrial, technical or art evening school or course subject to the Regulations and on the report of the principal, approved by the advisory industrial committee, that they are competent to receive instruction therein. 3-4 Geo. V. c. 73, s. 5.

**Advisory Committee**

**Composition and Name**

**6.**—(1) Every technical school established before the 21st March, 1911, and then in operation, and the schools mentioned in section 4, whether heretofore or hereafter established, shall be under the management and control of a committee composed of eight or twelve persons as the board may direct, the members of which shall be appointed by the board as follows:

(*a*) When the number of persons is eight.

(i) Four members of the board, including one representative of the board of public school trustees and one representative of the board of separate school trustees, if any;

(ii) Two persons, not members of the board, who are engaged as employees in the manufacturing or other industries carried on in the local municipality or in the county or district in which the school is situate; and

(iii) Two other persons, not members of the board, who are employers of labour or directors of companies employing labour in manufacturing or other industries carried on in the local municipality or in the county or district in which the school is situate:

(*b*) When the number of persons is twelve,

(i) Six members of the board, including one representative of the board of public school trustees and one representative of the board of separate school trustees, if any,

(ii) Three persons, not members of the board, who are engaged as employees in the manufacturing or other industries carried on in the local municipality or in the county or district in whch the school is situate, and

(iii) Three other persons, not members of the board, who are employers of labour or directors of companies employing labour in manufacturing or other industries carried on in the local municipality or in the county or district in which the school is situate.

(2) The committee shall be known as the Advisory Industrial Committee.

## Agricultural and Commercial Schools and Courses

### ADVISORY COMMITTEE

#### Composition and Name

**7.**—(1) Where in accordance with the Regulations an agricultural or a commercial high school has been or is hereafter established or an agricultural or a commercial course is established in a high school or a continuation school, such a school or course shall be under the management and control of a committee composed of eight persons, the members of which shall be appointed by the board as follows:—

(*a*) Four members of the board, including one representative of the board of public school trustees and one representative of the board of separate school trustees, if any;

(*b*) Four persons who are resident ratepayers of the local municipality or of the county or district in which the school is situate or the course is established who are not members of the board and who,

(i) In the case of an agricultural high school or agricultural course are actually engaged in agricultural pursuits, or

(ii) In the case of a commercial high school or commercial course are actually engaged in commercial pursuits.

(2) The committee shall be known as the Advisory Agricultural Committee or the Advisory Commercial Committee, as the case may be.

(3) Subject to the regulations, pupils who have been duly admitted to a high school under sections 44 or 45 of *The High Schools Act* may be admitted to a commercial or agricultural high school or the commercial or agricultural courses of a high or continuation school.

(4) Subject to the regulations, the public school inspector and the principal of a high or continuation school may also admit to an agricultural high school or to the agricultural courses of a high or continuation school a pupil who has at least the standing of form 4 of the public and separate schools, but who does not hold a high school entrance certificate, and who is at least fourteen years of age.

### ADVISORY COMMITTEES

#### Appointment and Tenure of Office

**8.**—(1) The first members of an advisory committee shall be appointed at the meeting of the board at which a school or course is established for which an advisory committee is to be appointed under this Act.

(2) The members appointed under subclause (i) of clause (*a*) of subsection 1 of section 6 and subclause (i) of clause (*b*) of section 6 and clause (*a*) of subsection 1 of section 7 shall hold office until the expiry of the period for which they were elected or appointed to the board.

(3) The term for which the other members of the committee shall respectively hold office shall be fixed by the board but shall not exceed three years.

**Filling Vacancies**

(4) The board, at its first meeting in each year after the establishment of the school or course, shall appoint a sufficient number of members from each class to fill the vacancies caused by the expiry of the term of office of members appointed from that class.

(5) Every vacancy upon a committee occasioned by death, removal or other cause shall be filled by the appointment by the Board of some person from the class in which the vacancy occurs, and every person so appointed shall hold office for the unexpired portion of the term of the member whose seat has become vacant.

**Quorum**

(6) The presence of a majority of the members constituting a committee shall be a quorum at any meeting, and a vote of the majority of such quorum shall be necessary to bind a committee.

**Chairman Voting**

(7) On every question other than the election of a chairman the chairman or presiding officer of the committee may vote with the other members of the committee, and any question on which there is an equality of votes shall be deemed to be negatived.

**Present Members to Remain in Office**

(8) The members of an advisory committee holding office on the 6th day of May, 1913, shall continue to hold office until their successors are appointed as provided by this Act. 3-4 Geo. V. c. 73, s. 8.

**Co=opted Members**

**9.**—(1) An advisory committee may, at a meeting which has been specially called for that purpose and of which notice has been given in writing to all the members, appoint such additional members, hereinafter called co-opted members, as it may deem advisable, and members of the board may be so appointed; but

(*a*) In the case of an advisory industrial committee an equal number of the persons so appointed shall be chosen from each of the classes mentioned in subclauses (ii) and (iii) of clauses (*a*) and (*b*) of subsection 1 of section 6; and

(*b*) In all cases the members so appointed shall belong to the classes from which persons not members of the board may be appointed by the board to the committee.

(2) The term for which co-opted members of the committee shall respectively hold office shall be fixed by the committee, but shall not exceed three years.

### Qualifications of Members

**10**. The members of a committee appointed under this Act, including co-opted members, shall be British subjects, and shall be persons who, in the judgment of the board, are specially competent to give advice and other assistance in the management of the school or course under the charge of the committee. 3-4 Geo. V. c. 73, s. 10.

### Powers of Committees

**11**.—(1) Subject to the approval of the Minister and the board, every advisory committee shall have authority to provide a suitable site and building and suitable equipment or to arrange for conducting the school or course in a high, public, separate or continuation school building or other building in the municipality, and to prescribe courses of study and provide for examinations and diplomas.

(2) Subject to the approval of the board, the committee shall employ teachers and fix their salaries, report on every school or course under its charge, fix the fees payable by pupils in attendance, submit annually to the board at such date as the board may prescribe an estimate of the amount required to carry on the work of the school or course during the year, and generally do all other things necessary for carrying out the objects and intent of this Act with respect to any school or course under its management and control.

(3) The board shall not refuse its approval of any report of an advisory committee without having given the committee an opportunity to be heard before the board and before any committee thereof to which such report may be referred by its chairman or by another member of the advisory committee appointed for that purpose.

### Officers of the Committee

(4) The secretary and other officers of the Board shall be the officers of the advisory committee.

(5) Subject to the approval of the board, an advisory industrial committee may appoint one or more officers with qualifications approved by the Minister, to collect and to distribute information regarding available occupations and employments, and to offer such counsel to the pupils of the schools under the charge of the committee as will enable them to plan intelligently for their vocational and educational advancement and every person so appointed shall be subject to the control of the advisory industrial committee.

### Provision for Cost of Establishment, Equipment and Maintenance of Schools and Courses

**12**.—(1) Subject to the Regulations the estimates of the committee of the cost of establishing, equipping and maintaining the school or course under its management and control, when and so far as they have been approved by the board, shall be included in its estimates submitted to the council of the municipality for the year.

(2) Subject to the Regulations, the cost of establishing and maintaining, and of making additions, alterations or permanent improvements to every school established under section 4 or under chapter 79 of the Acts passed in the 1st year of His Majesty's reign, shall be provided in the same manner as in the case of a High School. *See* 1 Geo. V. c. 79, s. 11.

### Apportionment of Legislative Grant

**13.** Subject to the Regulations the Minister shall apportion all sums of money appropriated by this Legislature for the establishment and maintenance of schools or courses to which this Act applies.

### Regulations

**14.** The Regulations may provide as to any class of schools or courses for the qualifications of teachers, the courses of study, the character of the site, accommodations, and equipment, the maximum and minimum fees that may be charged to pupils, and generally as to any matter relating to the conduct and efficiency of the schools and courses not herein expressly provided for.

### Control of Certain Public and Separate School Courses

**15.** Subject to the Minister's approval where an advisory committee and the board of education or the board of public or separate school trustees so agree, evening courses in manual training and household science, art, agriculture or commerce under the charge of the Board shall thereafter be under the control and management of the advisory industrial, agricultural or commercial committee as the case may be. 3-4 Geo. V. c. 73, s. 15.

### Establishment of Evening Courses in other Centres

**16.** Subject to the approval of the Minister an advisory committee may also establish and conduct special evening courses in any centre in the county outside of the district over which it has jurisdiction.

## II. THE ADOLESCENT SCHOOL ATTENDANCE ACT, 1919

*Assented to 24th April, 1919.*

HIS MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

Short title.

**1.**—This Act may be cited as *The Adolescent School Attendance Act, 1919.*

Interpretation.

**2.**—In this Act,—

"Adolescent."

(*a*) "Adolescent" shall mean a person of either sex who is not more than eighteen years of age, and who is exempted from school attendance under *The School Attendance Act, 1919*; 9 Geo. V., c. 77.

"Minister."

(*b*) "Minister" shall mean Minister of Education;

"Regulations."

(*c*) "Regulations" shall mean regulations made under the authority of *The Department of Education Act* or of this *Act.*

"School."

(*d*) "School" shall mean a school organized under *The Public Schools Act, The Separate Schools Act, The Consolidated Schools Act, The Continuation Schools Act, The High Schools Act* or *The Industrial Education Act.*

Compulsory attendance from 14 to 16.

**3.**—(1) Every adolescent between fourteen and sixteen years of age shall attend school for the full time during which the schools of the municipality in which he resides are open each year unless excused for the reasons hereinafter mentioned.

Exceptions.

(2) The obligation to attend school under this section shall not apply to any adolescent if—

(a) He is unable to attend school by reason of sickness, infirmity, or other physical defect;

(b) He is employed on the authority of a home permit or of an employment certificate as hereinafter provided;

(c) He has passed the matriculation examination of an approved university or has completed, to the satisfaction of the Department of Education, a course of study which may be regarded as the equivalent of the requirements of such examination, or

(d) He is in attendance at some other educational institution approved by the Minister.

Home permits.

**4.**—(1) Where, in the opinion of the school attendance officer, the services of an adolescent between fourteen and sixteen years of age are required in any permitted occupation in or about the home of his parent or guardian, he may be granted by an attendance officer, on the written application of his parent or guardian, a home permit to engage in such services.

Employment certificates..

(2) Where, in the opinion of the school attendance officer, the services of an adolescent between fourteen and sixteen years of age are required in some permitted gainful occupation for the necessary maintenance of such adolescent or some person dependent upon him, he may be granted by an attendance officer, on the written application of his parent or guardian, an employment certificate to engage in such services.

Hours during which employment prohibited.

**5.**—No adolescent between fourteen and sixteen years of age shall be employed by any person during the hours from 8 a.m. to 5 p.m., unless he holds a home permit, or an employment certificate, as provided for in section 4 of this Act.

Part-time courses between 14 and 16.

**6.**—Every adolescent between fourteen and sixteen years of age who holds either a home permit or an employment certificate, shall attend part-time courses of instruction, approved by the Minister, for an aggregate of at least 400 hours each year, distributed as regards times and seasons as may best suit the circumstances of each locality, when such part-time courses of instruction are established in the municipality in which he is employed.

Between 16 and 18.

**7.**—(1) Unless excused for reasons hereinafter mentioned, every adolescent between sixteen and eighteen years of age shall attend part-time courses of instruction, approved by the Minister, for an aggregate of at least 320 hours each year, distributed as regards times and seasons as may suit the circumstances of each locality, when such courses of instruction are established in the municipality in which he resides or is employed.

Exceptions.

(2) The obligation to attend part-time courses of instruction under this section shall not apply to any adolescent if—

(*a*) He is unable to attend such courses by reason of sickness, infirmity, or other physical defect;

(*b*) He has passed the matriculation examination of an approved university or has completed, to the satisfaction of the Department of Education, a course of study which may be regarded as the equivalent of the requirements of such examination;

(*c*) He is in full-time attendance at a public or a separate school, a high school, a university, or other school approved by the Minister;

(*d*) He is shown to the satisfaction of the public school inspector in the municipality in which he resides to have been, up to the age of sixteen, under full-time instruction in a school recognized by the Department of Education as efficient, or under suitable and efficient full-time instruction in some other manner.

Employment of adolescent—when prohibited.

**8.**—No adolescent between sixteen and eighteen years of age in a municipality in which part-time courses of instruction approved by the Minister are maintained shall be employed by any person unless he holds either a school dismission card or a school registration card to be issued as provided in the regulations.

Establishment of part-time courses.

**9.**—On and after such date as may be fixed by the Lieutenant-Governor by proclamation, every urban municipality with a population of 5,000 and over shall, and any other municipality or school section may, through the authorities hereinafter named, establish and maintain part-time courses of instruction for the education of adolescents between fourteen and eighteen years of age.

Courses of study.

**10.**—The subjects of the courses of study for adolescents shall be selected from those prescribed by the Department of Education for the public and separate schools; the high schools; the art, industrial, and technical schools and classes; the commercial high schools and the commercial departments of the high schools; and the agricultural and household science departments in high schools.

Control of part-time courses.

**11.**—(1) Subject to the regulations of the Department of Education courses for adolescents in the public and separate schools respectively, shall be provided by and shall be under the control of the boards of said schools, and those in the continuation schools and the high schools shall be provided by and shall be under the control of the boards of said schools.

Courses for study under Rev. Stat., c. 276.

(2) Where schools or classes have been established under section 4 of *The Industrial Education Act,* the courses of study for adolescents engaged in trades or in industrial or manufacturing occupations, shall be provided by and shall be under the control of the advisory industrial committee.

Advisory commercial committee.

(3) In a municipality where there is a commercial high school or a commercial department in a high school, the courses for adolescents engaged in commercial occupations shall be provided by and shall be under the control of the advisory commericial committee.

Hours of instruction.

**12.**—Classes providing part-time courses of instruction for adolescents shall be in session for the same number of days in each year as the high schools of the province, and such classes shall not open before 8 a. m. nor close later than 5 p.m.

Inspection.

**13.**—The part-time courses for instruction for adolescents shall be subject to such inspection as the Minister may prescribe.

Suspension of employment during hours of instruction.

**14.**—The employment of any adolescent who is under an obligation under this Act to attend part-time courses of instruction shall be suspended on any day when his attendance at such courses is required not only during the period for which he is required to attend the courses, but also for such additional time as is necessary for him to travel to or from the school where instruction is given.

Time of instruction included in legal hours of employment.

**15.**—The time spent by an adolescent in attendance at part-time courses of instruction shall be reckoned as a part of the number of hours per day or per week that such adolescent may be lawfully employed.

Offences and penalties.

**16.**—(1) Every person who—

(*a*) Employs an adolescent who does not hold either (*i*) a home permit or an employment certificate as defined in section 4, or (*ii*) a school dismission card or a school registration card as defined in section 8; or,

(*b*) Employs an adolescent at any time during which his attendance is by this Act required at part-time courses of instruction; or,

(*c*) Employs such adolescent for such a number of hours as with the number of hours during which the adolescent is required to attend such courses will exceed in any day or week the number of hours during which such adolescent may be lawfully so employed; or,

(*d*) Being a parent or guardian of an adolescent, has conduced to or connived at the failure on the part of an adolescent to attend part-time courses of instruction as required under this Act, or suffers or permits such adolescent, through want of proper care or control, to violate any of the obligations of this Act,

shall incur a penalty not exceeding $5 for the first offence, and in the case of a second or subsequent offence in relation to the same adolescent or another adolescent, shall incur a penalty not exceeding $25.

Application of Rev. Stat., c. 90.

(2) The penalties imposed by this section shall be recoverable under *The Ontario Summary Convictions Act.*

Revocation of home permits, etc.

**17.**—The school attendance officer in the municipality in which an adolescent is employed may revoke the home permit, the employment certificate, or the school registration card of an adolescent who fails to attend part-time courses of instruction as required by the provisions of this Act.

**18.**—For the purpose of enforcing this Act, the school attendance officer appointed under *The School Attendance Act, 1919*, shall perform the duties of the school attendance officer named in sections 4 and 17 and shall have the powers and shall perform the duties conferred and imposed upon him by the said Act. Duties of school attendance officer.

**19.**—No penalty shall be imposed in respect to the absence of an adolescent from any part-time course of instruction established under this Act on a day regarded as a holy day by the church or religious denomination to which the adolescent belongs. Absence on holy days.

**20.**—Municipalities maintaining such part-time courses of instruction for adolescents as are approved by the Minister as to organization, control, location, equipment, courses of study, qualifications of teachers, methods of instruction, conditions of admission, employments of pupils, and expenditures of money, may receive reimbursement from sums appropriated by this Legislature for this purpose or for technical or for agricultural education, in amounts and under conditions prescribed in the regulations. Application of legislative appropriation.

**21.**—*The Adolescent School Attendance Act,* chapter 275 of the Revised Statutes of Ontario, 1914, is repealed. Rev. Stat., c. 275, repealed.

**22.**—This Act shall come into force and take effect on a day to be named by the Lieutenant-Governor by proclamation. Commencement of Act.

## III. THE TECHNICAL EDUCATION ACT

HIS Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

Short title.

**1.**—This Act may be cited as *The Technical Education Act.*

Definitions.

**2.**—In this Act the expression,—

(*a*) "Minister" means the Minister of Labour;

(*b*) "Province" means and includes each of the provinces of Canada, but not the Northwest Territories or the Yukon Territory;

(*c*) "Technical Education" means and includes any form of vocational, technical or industrial education or instruction, approved by agreement between the Minister and the Government of any province as being necessary or desirable to aid in promoting industry and the mechanical trades, and to increase the earning capacity, efficiency and productive power of those employed therein.

Not to apply to any province which has not approved of Act.

**3.**—This Act shall not apply to any province until the Government thereof has by order in council signified its desire to take advantage thereof.

Amounts payable.

**4.**—(1) For the purpose of promoting and assisting technical education in Canada, the following sums, aggregating ten million dollars, shall be appropriated and paid out of the Consolidated Revenue Fund of Canada during each fiscal year for the period of ten years beginning with the year ending the thirty-first day of March, one thousand nine hundred and twenty, namely,—

(*a*) During the fiscal year ending the thirty-first day of March, one thousand nine hundred and twenty, the sum of seven hundred thousand dollars;

(*b*) During the fiscal year ending the thirty-first day of March, one thousand nine hundred and twenty-one, the sum of eight hundred thousand dollars;

(*c*) During the fiscal year ending the thirty-first day of March, one thousand nine hundred and twenty-two, the sum of nine hundred thousand dollars;

(*d*) During the fiscal year ending the thirty-first day of March, one thousand nine hundred and twenty-three, the sum of one million dollars;

(*e*) During the fiscal year ending the thirty-first day of March, one thousand nine hundred and twenty-four, the sum of one million one hundred thousand dollars;

and the like sum of one million one hundred thousand dollars during each of the succeeding fiscal years until the expiration of the fiscal year ending the thirty-first day of March, one thousand nine hundred and twenty-nine.

Grants of $10,000 each year, and balance payable quarterly in proportion to population of provinces.

(2) Such sums, subject to the conditions of this Act, shall be allotted and shall be paid quarterly as grants to the Governments of the several provinces as follows:—

(*a*) The sum of ten thousand dollars shall be paid in each year to the Government of each province;

(*b*) The remainder of the appropriation for each year shall be allotted and paid to the Governments of the respective provinces in proportion to the population of the said provinces respectively as determined by the last federal decennial census.

Grant not to exceed amount spent by province.

**5.**—(1) The grant payable to any province in any year shall not exceed the amount provided for each province by the next preceding section, nor shall it exceed an amount equivalent to that which the Provincial Government shall expend on technical education within such year.

Expenditure by province for land, buildings and equipment of institution established before April, 1919, not to be taken into account.

(2) In determining the grant payable to any province annually, no account shall be taken of any liability or expenditure incurred by the province for the acquiring of land, the erection or improvement of any buildings, or the supplying of furnishings or equipment for any technical education institution established in the province prior to the first day of April, one thousand nine hundred and nineteen.

Terms upon which payments will be made.

**6.**—The payment of the grants hereinbefore authorized shall be made subject to the following terms and conditions:—

(*a*) All payments shall be applied and used for technical education in the manner agreed upon by the Minister and the Government of each province; every such agreement shall be approved by the Governor in Council;

(*b*) No portion of any grant shall be used in whole or in part in meeting any liability or expenditure of any kind whatsoever incurred in any province prior to the first day of July, one thousand nine hundred and nineteen, for lands, buildings, furnishings or equipment secured or provided for technical education purposes;

(*c*) Not more than twenty-five per centum of the annual grant payable to any province shall be applied for acquiring land, erecting, extending or improving buildings, or supplying furnishings and equipment;

(*d*) There shall be forwarded to the Minister annually, by each province taking advantage of the provisions of this Act, a report setting forth the work done in such province in promoting technical education, containing such details and information as may be prescribed by the Minister;

(*e*) Every province receiving a grant shall furnish the Minister with such evidence as he may require, to show that the grants paid hereunder are expended for technical education as provided by this Act.

Appointment of staff.

**7.**—Such officers and employees as may be required for carrying out the provisions of this Act, shall be appointed under the provisions of *The Civil Service Act, 1918.*

Balances unexpended to be carried forward but not more than 25% of grant without consent of Minister.

**8.**—Any portion of any appropriation authorized under this Act which may remain unexpended at the expiration of any of the said fiscal years, shall be carried forward and remain available according to its apportionment for the purposes of this Act during any one or more of the succeeding years; provided that not more than twenty-five per centum of any annual appropriation shall be so carried forward and remain available without the approval of the Minister.

Annual report.

**9.**—The Minister shall make an annual report on or before the thirty-first day of March on the work done, under the provisions of this Act, containing such information and particulars as the Governor in Council may prescribe, and shall include in such report the reports made by the several provinces on the work done in each province for the promotion of technical education and the expenditure connected therewith,

Laid before Parliament.

and such report shall be submitted to both Houses of Parliament by the Minister within fifteen days after the presentation of the report, if Parliament is then sitting, and, if not, then within fifteen days after the opening of the next session of Parliament.

# APPENDIX C

## UNIT COURSES FOR PART-TIME AND EVENING CLASSES

### Courses for Men

Suggested fields of trades and industries in which instruction may be given in part-time and evening classes to men already employed in these occupations.

I. Automobile repair and construction.
II. Baking.
III. Building construction (including carpentry, mill-room work, bricklaying, building foremen, cost estimating, and concrete construction).
IV. Drawing and design (including building construction drafting, sheet-metal drafting, interior decorating and machine drafting and design).
V. Electricity (general).
VI. Gas manufacture.
VII. Heat treatment.
VIII. Machine-shop subjects.
IX. Plumbing.
X. Printing (including presswork and linotype operation).
XI. Radio operation.
XII. Sheet metal.
XIII. Slide rule.
XIV. Steam fitting.
XV. Telegraphy (Morse).
XVI. Telephony.
XVII. Welding.

Suggestions as to the way in which the processes in the trades and industries given above may be organized into courses given in a limited number of evenings.

### I. Automobile Repair and Construction

The unit courses in automobile repair and construction include:

| | Lessons. |
|---|---|
| A— 1. Practical shopwork and lectures on frames and axles | 10 |
| A— 2. Practical shopwork and lectures on transmission, clutches, and steering gears | 10 |
| A— 3. Practical shopwork and lectures on engines and lubrication | 30 |
| A— 4. Practical shopwork and lectures on carburetors | 10 |
| A— 5. Practical shopwork and lectures on ignition and magnetos | 15 |
| A— 6. Practical shopwork and lectures on batteries and starting and lighting | 25 |
| A— 7. Laboratory testing and experimenting on ignition | 10 |
| A— 8. Laboratory testing and experimenting on starting and lighting | 10 |
| A— 9. Laboratory testing and experimenting on batteries | 10 |
| A—10. Laboratory testing and experimenting on engines | 10 |
| A—11. Laboratory testing and experimenting on lubrication | 5 |
| A—12. Laboratory testing and experimenting on chassis | 5 |
| A—13. Sketching, plan reading, and mathematics of the automobile | 20 |
| A—14. Garage organization and management | 10 |
| A—15. Garage records and cost systems | 10 |
| A—16. Salesmanship of automobiles | 20 |
| A—17. Salesroom records and cost systems | 10 |
| A—18. Advantages and disadvantages of different types of automobile devices and construction | 10 |

Lessons.

A—19. Discussion of advantages and disadvantages of motor trucks and their construction ..... 10
A—20. Discussion of advantages and disadvantages of different types of gas tractors and their construction..... 10
A—21. Testing strength of material as used in automotive construction..... 5

### II. Baking

The unit courses in baking include the following:

B—1. Elementary baking chemistry (including general chemistry, laboratory analysis of flour and baking materials)..... 50
B—2. Advanced baking chemistry (including lectures on chemistry of baking, laboratory work, fermentations, microscopic tests, nutrition tests, starches, sugars, yeast, and yeast foods)..... 50
B—3. Bakeshop mechanics, fuels, sanitation, cost estimating and oven control. 50

### III. Building Construction

The unit courses in building construction may include the following:

BC— 1. Shopwork in house framing..... 10
BC— 2. Shopwork in roof construction..... 10
BC— 3. Shopwork in stair building..... 10
BC— 4. Shopwork in outside trimming and interior finishing..... 10
BC— 5. Mill-room practice ..... 10
BC— 6. Builders' hardware ..... 5
BC— 7. Saw filing ..... 5
BC— 8. Mathematics for carpenters and bricklayers..... 20
BC— 9. Elementary sketching and drawing for carpenters and bricklayers.. 10
BC—10. Elementary plan reading for carpenters and bricklayers..... 10
BC—11. Taking of quantities and study of building materials..... 10
BC—12. Practical work in laying bonds for bricklayers..... 20
BC—13. Practical work in building arches for bricklayers..... 30
BC—14. Specifications and details in wood..... 30
BC—15. Specifications and details in masonry ..... 20
BC—16. Specifications and details in steel..... 20
BC—17. Advanced plan reading and estimating..... 10
BC—18. The building ordinances of Minneapolis..... 10
BC—19. Time keeping and cost distribution..... 10
BC—20. Figuring cost of small structures and city ordinances..... 50
BC—21. Mathematics for cost estimators of large structures..... 50
BC—22. Plan reading and interpretation of specifications for estimators of large structures..... 10
BC—23. Study of materials of construction and city ordinances for estimators of large structures ..... 10
BC—24. Figuring costs of large structures under $100,000..... 30
BC—25. Figuring costs of large structures over $100,000..... 50

The following unit courses may be offered in concrete construction only:

BC—26. Kinds of cement and their manufacture..... 5
BC—27. Concrete sands and stone..... 10

| | Lessons. |
|---|---|
| BC—28. Proportions of concrete ingredients | 5 |
| BC—29. Mixing of concrete and concrete mixers (including placing of concrete and operation of concrete-mixer engines) | 10 |
| BC—30. Concrete-form construction | 5 |
| BC—31. Properties and methods of testing cement and concrete | 15 |
| BC—32. Concrete construction in cold weather | 5 |
| BC—33. Waterproofing concrete | 5 |
| BC—34. Cement finishes and surfacing | 5 |
| BC—35. Cement block, brick, and tile manufacture | 20 |
| BC—36. Concrete structures (including elementary reinforced concrete) | 15 |
| BC—37. Principles and disposition of reinforced concrete | 5 |
| BC—38. Reinforcing metals and their physical properties | 10 |
| BC—39. Mechanics applied to reinforced concrete | 5 |
| BC—40. Systems of reinforced concrete | 5 |
| BC—41. Theory of beams and slabs | 15 |
| BC—42. Theory of columns | 5 |
| BC—43. Foundations and retaining walls | 5 |

### IV. Drawing and Design

The unit courses in drafting and design as a special subject may include the following:

| | |
|---|---|
| D— 1. Elementary building-construction drafting | 50 |
| D— 2. Advanced building-construction drafting | 50 |
| D— 3. Elementary sheet-metal drafting | 50 |
| D— 4. Advanced sheet-metal drafting | 50 |
| D— 5. Elementary interior decorating | 50 |
| D— 6. Advanced interior decorating | 50 |
| D— 7. Elementary drafting for stonecutters | 50 |
| D— 8. Advanced drafting for stonecutters | 50 |
| D— 9. Elementary mechanical drafting and machine design | 50 |
| D—10. Advanced mechanical drafting and machine design | 50 |
| D—11. Structural steel design No. 1 | 50 |
| D—12. Structural steel design and estimating No. 2 | 50 |

### V. Electricity

The unit courses in electricity may include:

| | |
|---|---|
| E— 1. Elementary mathematics of electricity | 15 |
| E— 2. Fundamental mechanical and electrical laws | 20 |
| E— 3. The theory and use of instruments and batteries | 15 |
| E— 4. National Electrical Code rules and city ordinances on inside work with low voltage | 15 |
| E— 5. National Electrical Code rules and city ordinances on fittings and materials | 15 |
| E— 6. National Electrical Code rules and city ordinances on inside work with high voltage | 10 |
| E— 7. Blue-print reading and estimating of materials for electricians | 10 |
| E— 8. Theory of direct-current and alternating-current generators with National Electrical Code rules and city ordinances | 15 |

Lessons.

E— 9. Theory of direct-current and alternating-current motors with National Electrical Code rules and city ordinances..... 15
E—10. National Electrical Code and city ordinances on the switchboard and its use ..... 10
E—11. National Electrical Code and city ordinances on special subjects (such as fire-alarm systems and motion-picture booths)..... 10
E—12. Mathematics, theory, and construction of direct-current generators and auxiliary apparatus..... 10
E—13. Mathematics, theory, and construction of direct-current motors and auxiliary apparatus..... 10
E—14. Use and repair of direct-current instruments in testing..... 10
E—15. Operation and maintenance of direct-current switchboard..... 10
E—16. Elementary course in the alternating current..... 10
E—17. The theory, mathematics, and construction of the alternating-current generator ..... 15
E—18. The construction, testing, and repair of alternating-current instruments and motors ..... 10
E—19. The construction, testing, and repair of alternating-current transformers and auxiliary apparatus..... 10
E—20. The construction, testing, and repair of alternating-current converting apparatus and switchboards..... 15
E—21. Mathematics and mechanics of outside electrical construction work.. 15
E—22. Reading of maps, plans and specifications for outside electrical construction work ..... 15
E—23. Methods of handling men, materials, and tools in outside electrical construction work ..... 10
E—24. Organization and cost keeping in outside electrial construction work 10
E—25. Treatment, handling and erection of pole line materials..... 10
E—26. Methods of guying wires, poles and wires in outside construction.... 10
E—27. Safety devices and precautions for outside electrical construction.... 5
E—28. Methods of excavating for conduits and manholes in underground electrical construction work..... 10
E—29. Laying and concreting conduits and manholes in underground electrical construction work..... 10
E—30. Methods of back-filling and repairing in underground electrical construction work ..... 5
E—31. Special course in electrical meters..... 50
E—32. Storage batteries for automobile men..... 15

### VI. Gas Manufacture

The unit courses in gas manufacture may include the following:

G—1. Physics and chemistry of gas manufacture..... 10
G—2. Coal carbonization process and coal-gas manufacture..... 15
G—3. Water-gas process and manufacture..... 10
G—4. Steam power plant equipment..... 10
G—5. Electric power plant equipment ..... 5
G—6. Gas distribution ..... 10
G—7. Gas meters ..... 10
G—8. Gas appliances..... 10
G—9. Distribution and commercial office practice..... 10

## VII. Heat Treatment

The unit courses in heat treatment include the following:

Lessons.

HT— 1. The physical and chemical properties of metals (including distinction between physical and chemical properties; some simple chemical reactions and formulas; solution—solid solution and euctectic mixtures. Critical temperature of tool steels, including rapid review of the manufacture of cast iron and the common steel processes—Bessemer, basic open hearth, etc., and use of heat curves) 10

HT— 2. Simple chemistry in the manufacture of steels and cast iron (including effect of carbon, silicon, manganese, sulphur, and phosphorus on the properties of iron, and the use of shore schleroscope)..... 10

HT— 3. Casehardening, pack hardening, and box annealing. Cyanide process (sprinkling, boiling, and coloring). Bone and composition process (including arrangement of pieces, test wires, and proper methods of quenching). Pack hardening and box annealing (including use of pyrometer, selective hardening, and Jones gas process metal substitute) ..... 10

HT— 4. Effect of temperatures on structure of steel and iron (each student will be given samples with directions for heating and cooking. He will make up a complete record of the heat treatment. The pieces will be tested and broken and results noted)..... 10

HT— 5. Tabulated results from HT-4 taken up in class and studied theoretically (including hardening complicated pieces, oil tempering, lead hardening, melted-salt hardening, and various practical devices) ..... 10

HT— 6. Review of HT-1, 2, 3, 4, 5. (The first five nights will be devoted to class and shop review of former work, questions, and difficulties straightened out). Alloy steels (effect of metals on steel mixture)—(chromium, nickel, molybdenum, tungsten, vanadium, manganese) ..... 10

HT— 7. Shop and class work on alloy steel (including probable composition determined from properties; proper and improper heating and cooling; schleroscope tests; and calibrating of pyrometer)..... 10

HT— 8. Use of microscope in study of metals (including preparing specimens; hand polishing; wheel polishing; and etching and coloring). Care and use of metallographic instruments (including methods of lighting, vertical; oblique; adjusting objectives and examinations of specimens)..... 10

HT— 9. Simple metallography (including microphotographs of metals; microscopic formation—alpha ferrite; beta ferrite, austinite, martensite, troostite, sorbite, pearlite, and cementite; iron carbon diagram; relation between microstructure and physical properties) 10

HT—10. Practical review of entire course (including theory as applied to best hardening room practice); layouts and methods of representative shops; and automatic and recording pyrometers..... 10

### VIII. Machine-Shop Subjects

The unit courses offered in machine shop may include the following:

| | Lessons. |
|---|---|
| M— 1. Shopwork on the drill press | 10 |
| M— 2. Shopwork on the lathe | 25 |
| M— 3. Shopwork on the planer | 10 |
| M— 4. Shopwork on the shaper | 10 |
| M— 5. Shopwork on the milling machine | 25 |
| M— 6. Shopwork with jigs and fixtures | 10 |
| M— 7. Shopwork on tool grinding | 20 |
| M— 8. Shopwork on grinder | 10 |
| M— 9. Review of arithmetic (including fractions, decimals, percentage, ratio, square root, weights and measures) | 10 |
| M—10. Mensuration (including simple formulae and tables, areas and surfaces, volumes and weights) | 10 |
| M—11. Speeds and speed ratios | 10 |
| M—12. Mathematics of lathes | 10 |
| M—13. Sketching and blue-print reading for machinists | 10 |
| M—14. Transforming formulae and simple algebra | 10 |
| M—15. Angles and triangles | 10 |
| M—16. Milling-machine mathematics | 10 |
| M—17. Mathematics of gears | 10 |
| M—18. Mathematics of milling cutters and blue-print reading | 10 |
| M—19. Modern organization and methods of production | 10 |
| M—20. Machine-shop materials | 10 |
| M—21. Mechanics of the machine shop | 10 |
| M—22. Machine types and attachments and special machines | 20 |
| M—23. Mathematics and mechanics for machine draftsmen and designers (including trigonometry and graphs) | 50 |

### IX. Plumbing

The unit courses in plumbing include the following:

| | |
|---|---|
| Pl—1. Roughing-in jobs, including calking and laying out work | 10 |
| Pl—2. Joint wiping and soldering | 20 |
| Pl—3. Installing fixtures | 20 |
| Pl—4. Mathematics and catalogue study | 20 |
| Pl—5. Drainage and ventilation, plumbing laws and ordinances | 20 |
| Pl—6. Hot-water supply and circulation | 10 |
| Pl—7. Chemistry for plumbers | 20 |
| Pl—8. Drainage and ventilation | 20 |
| Pl—9. Plumbers' laws and ordinances | 10 |

### X. Printing

The unit courses in printing will include the following:

| | |
|---|---|
| Pr— 1. Printer's English | 10 |
| Pr— 2. Job composition | 30 |
| Pr— 3. Imposition | 10 |
| Pr— 4. Lettering for printers | 10 |
| Pr— 5. Free-hand drawing for printers | 10 |
| Pr— 6. Applied design for printers | 10 |

Lessons.

Pr— 7. Materials used in printing (paper, ink, and plates) ..... 10
Pr— 8. Elements of cost in printing ..... 10
Pr— 9. Bookkeeping and cost accounting ..... 30
Pr—10. Estimating for printers ..... 20
Pr—11. Linotype (mechanism and operation) ..... 50
Pr—12. Feeding the platen press ..... 10
Pr—13. Make-ready on the platen press ..... 15
Pr—14. Feeding the cylinder press ..... 10
Pr—15. Make-ready on cylinder press ..... 20
Pr—16. Mixing colors for pressmen ..... 10
Pr—17. Color work for pressmen ..... 10
Pr—18. Inks and papers ..... 10
Pr—19. Stock cutting and cost estimating ..... 15

### XI. Radio Operation

The unit courses in radio operation include the following:

R— 1. Elementary mathematics of electricity ..... 15
R— 2. Fundamental mechanical and electrical laws ..... 10
R— 3. Elementary course in alternating current ..... 10
R— 4. Theory and use of instruments ..... 5
R— 5. Construction, operation, and management of storage batteries ..... 5
R— 6. Transformers and induction coils ..... 5
R— 7. Inductance and capacity ..... 10
R— 8. Condensers and oscillating currents ..... 5
R— 9. Antennas and grounds ..... 5
R—10. Radio power circuits ..... 5
R—11. Radio laws and operating practice ..... 20
R—12. Wave meters and measurements ..... 5

### XII. Sheet Metal

The unit courses in sheet metal include the following:

SM— 1. Elementary shopwork (including rules and regulations for apprentices; machines and their names; elementary soldering and laying out of pipe elbows, pails, and small articles) ..... 17
SM— 2. Elementary sheet metal work (including listing of material from blue prints; and the use of scale rule in connection with blue prints) ..... 5
SM— 3. Advanced shopwork (including the making of funnels, octagonal tee-joints, scoops, dripping pans, measures, cans, bosses, also wash-boiler covers and scale scoops; and advanced soldering) ..... 10
SM— 4. Furnace work (including the making of different furnace fitting; how to install a furnace—getting the area of the house and selecting a proper place to set furnace) ..... 8
SM— 5. Outside jobbing and advanced shopwork (including repairing of outside sheet-metal work, laying of different roofs, and laying out of small utensils) ..... 10
SM— 6. Architectural and cornice work (including measuring and laying out of a cornice, laying out of gable molds, panels, lintels, and laying out block letters and figures) ..... 15

Lessons.

SM— 7. Marquèe, skylight and window work (including skylight work, such as making of bars, cross bars, curbs, also how to lay out a skylight; laying out and assembling a photographer's skylight; hipped skylights; ventilators for skylights; irregular octagon skylights; monitor skylight; and different parts of marquee and store awnings) ..... 35

SM— 8. Exhaust and blow piping (including measuring and laying out of a blow-pipe system, separators, and making of hoods) ..... 10

SM— 9. Advanced triangulation (including making and laying out of different fittings, such as boots, angles, etc.) ..... 10

SM—10. Automobile sheet-metal work (including brazing, soldering, repairing radiators, fenders, dashboard, etc.) ..... 10

SM—11. Test plan reading (including listing of material from blue print in large jobs, amounting to several thousand dollars) ..... 10

SM—12. Heating and ventilating in all its branches ..... 10

### XIII. Slide Rule

The unit courses in slide rule include the following:

SR—1. Elementary slide-rule operation (including multiplication, division, power and roots of whole numbers, fractions, decimals, percentage, mensuration, costs and estimating) ..... 10

SR—2. Advanced slide-rule operation (including formulae, such as those used in estimating and designing) ..... 10

SR—3. Trigonometry and difficult slide-rule operation (including logorithms, etc., such as used by designers, estimators, civil, mechanical, and electrical engineers) ..... 5

### XIV. Steamfitting

The unit courses in this subject include the following:

Sf—1. Mathematics and catalogue study ..... 20

Sf—2. Freehand sketching and laying out of water, vapor, and low-pressure heating systems ..... 20

Sf—3. Plan reading and estimating quantities ..... 10

### XV. Telegraphy

One unit course of 50 nights should be offered in Morse telegraphy. This course should cover the Morse code operation and be open to those who desire to become telegraph operators.

The Government has taken so many operators to use in the wireless stations that it has left the country in a crippled condition for telegraph operators at home.

This course as offered should equip the student for a good position.

Classes may be held on Monday and Thursday evenings each week for 50 evenings. A certificate is given at the close of the unit course to each student who satisfactorily completes the course.

Entrance requirements: Any person 17 years of age who shows to the satisfaction of the instructor that he has the ability to become an operator is eligible to this course.

## XVI. Telephony

The list of unit courses may include the following. These unit courses are given the numbers by which they will be hereafter known in all the work of the school:

| | Lessons. |
|---|---|
| T— 1. General science of telephony | 12 |
| T— 2. Mathematics of telephony | 12 |
| T— 3. Substation course No. 1 | 12 |
| T— 4. Substation course No. 2 | 12 |
| T— 5. Private branch exchange No. 1 | 12 |
| T— 6. Private branch exchange No. 2 | 12 |
| T— 7. Cable course No. 1 | 12 |
| T— 8. Cable course No 2 | 12 |
| T— 9. Exchange aerial construction course No. 1 | 12 |
| T—10. Exchange aerial construction course No. 2 | 12 |
| T—11. Exchange underground construction | 12 |
| T—12. Toll line construction | 12 |
| T—13. Central office equipment course No. 1 | 12 |
| T—14. Central office equipment course No. 2 | 12 |
| T—15. Central office equipment course No. 3 | 12 |
| T—16. Central office power plant | 12 |
| T—17. Testing course | 12 |
| T—18, 19, 20. Automatic telephony | 36 |

## XVII. Welding

The unit courses in welding include the following:

| | |
|---|---|
| W—1. Care of apparatus (including heat and adjustment of flames) | 5 |
| W—2. Properties of metals, fusian conductivity, oxidation and absorption of gas | 5 |
| W—3. Gases, oxygen and acetylene | 10 |
| W—4. Preheating of metals | 5 |
| W—5. Expansion and contraction of metals | 5 |
| W—6. Cast-iron welding | 5 |
| W—7. Steel welding | 5 |
| W—8. Care and repair of malleables and brazing | 5 |
| W—9. Aluminum welding | 5 |

Selections can be made from the units suggested according to the needs of the particular occupations of the evening school pupils. This selection will enable a school to prepare a programme which will be composed of all the units which can be taken to advantage in the sequence suggested and which will enable the students to secure, in a period of years, a thorough knowledge of the practical and theoretical phases of a particular occupation.

A few examples of the way in which the units may be offered in a general course follow. The references are to the units described above.

## COURSES IN AUTOMOBILE REPAIR AND CONSTRUCTION

### 1. GENERAL COURSES FOR AUTOMOBILE MECHANICS.

#### *A. For machinists.*

The applicant must be employed as a machinist. He must be able to prove by test that he can do simple machine-shop work on the drill press, grinder, and lathe. To secure a diploma, he must take the following unit courses:

| | | Lessons. |
|---|---|---|
| A— 1. | Practical shopwork and lectures on frames and axles | 10 |
| A— 2. | Practical shopwork and lectures on transmission, clutches, and steering gears | 10 |
| A— 3. | Practical shopwork and lectures on engines and lubrication | 30 |
| A— 4. | Practical shopwork and lectures on carburetors | 10 |
| A— 5. | Practical shopwork and lectures on ignition and magnetos | 15 |
| A— 6. | Practical shopwork and lectures on batteries, and starting and lighting | 25 |
| W—1A. | Oxy-acetylene welding | 10 |
| H—1A. | Heat treatment and forge work | 10 |
| A—13. | Sketching, plan reading, and mathematics of the automobile | 20 |
| SM—1A. | Sheet-metal work | 10 |
| A— 7. | Laboratory testing and experimenting on ignition | 10 |
| A— 9. | Laboratory testing and experimenting on batteries | 10 |
| A—10. | Laboratory testing and experimenting on engines | 10 |
| A—11. | Laboratory testing and experimenting on lubrication | 5 |
| A—12. | Laboratory testing and experimenting on chassis | 5 |

Courses 1, 2, 3, 4, 5, and 6 must be taken in order given. Courses W-1A, H-1A, A-13 and SM-1A can be taken at any time. Courses 7, 8, 9, 10, 11, and 12 can not be taken until all other courses have been completed. It is possible for the student to take two courses per week, thereby doing two years' work in one.

#### *B. For Garage Men.*

Applicant must be employed as a mechanic of some kind in the automobile business. It is possible that he can prove up by test on some of these units, in which case he would be given credit. To secure a diploma in this course the student must prove by test that he does not need them or take the following unit courses:

| | | Lessons. |
|---|---|---|
| A— 1. | Practical shopwork and lectures on frames and axles | 10 |
| A— 2. | Practical shopwork and lectures on transmission, clutches, and steering gears | 10 |
| A— 3. | Practical shopwork and lectures on engines and lubrication | 30 |
| A— 4. | Practical shopwork and lectures on carburetors | 10 |
| A— 5. | Practical shopwork and lectures on ignition and magnetos | 15 |
| A— 6. | Practical shopwork and lectures on batteries, and starting and lighting | 25 |
| A— 7. | Laboratory testing and experimenting on ignition | 10 |
| A— 8. | Laboratory testing and experimenting on starting and lighting | 10 |
| A— 9. | Laboratory testing and experimenting on batteries | 10 |
| A—10. | Laboratory testing and experimenting on engines | 10 |

| | Lessons. |
|---|---|
| A—11. Laboratory testing and experimenting on lubrication | 5 |
| A—12. Laboratory testing and experimenting on chassis | 5 |
| M—1 to 8, inclusive. Fifty lessons from these machine-shop courses, work as planned by the school for the individual student | 50 |
| A—13. Sketching, plan reading, and mathematics of the automobile | 20 |
| W—1A. Oxy-acetylene welding | 10 |
| H—1A. Heat treatment and forge work | 10 |
| SM—1A. Sheet-metal work | 5 |
| A—21. Testing strength of materials as used in automotive construction | 5 |

Units 1, 2, 3, 4, 5, and 6 must be taken in the order named unless the student can show by test that he does not need them.

M—1 to 8, inclusive, can be taken at any time.

W—1A, H—1A, SM—1A, and A—21 must be taken before 7, 8, 9, 10, 11, and 12. It is possible for the student to enroll in more than one class. In this way he may take two years' work in one.

*C. For garage managers and automobile salesmen.*

This course is open to three groups:

A. Those completing the general course for automobile mechanics.

B. The garage managers and foremen.

C. Salesmen of automobiles, motor trucks, and gas tractors.

*Entrance requirements.*—The garage manager and foreman must have a common-school education or its equivalent. He must either take the shop course as offered in the general course of automobile mechanics or show by a test that he is familiar with automobile construction.

The salesman must be a common school graduate and show by test that he has a working knowledge of automobile construction. This general course must be taken in the order named.

| | Lessons. |
|---|---|
| A—14. Garage organization and management | 10 |
| A—15. Garage records and cost systems | 10 |
| A—16. Salesmanship of automobiles | 20 |
| A—17. Salesroom records and cost systems | 10 |
| A—18. Advantages and disadvantages of different types of automobile devices and construction | 10 |
| A—19. Discussion of advantages and disadvantages of motor-truck construction | 10 |
| A—20. Discussion of advantage of different types of gas tractors | 10 |
| A—21. Testing strength of materials that are used in automotive construction | 10 |
| A—12. Laboratory testing and experimenting on chassis | 10 |

The following is given as an example of the lessons which may be planned for a particular unit. In this case unit M—2 is chosen. The lessons are taken from Bulletin No. 8, published by the Federal board.

## M—2. Shop Work on the Lathe

### PLAIN TURNING

*Lesson 1.*—Oral instruction: Care, cleaning, and oiling of lathe. Proper centring for accurate work.

*Lesson 2.*—Stock, mild steel, 5/8 to 1 inch diameter. Finish over all first to accurate length, then to diameter shown on sketch, sample, or blue print. Note the result if the live center is not running true. Grind the centers.

*Lesson 3.*—Stock, mild steel, 1/2 to 3/4 inch diameter. Turn to accurate length and diameter and face shoulder square, e. g., blank bolts.

*Lesson 4.*—Stock, mild steel, 3/4 to 1 1/4 inch. Taper turning. Taper by taper attachment.

*Lesson 5.*—Taper turning by setting over tailstock center. Fit taper plug to a reamed taper hole, e. g., No. 3 drill socket. Give instruction and practice in resetting tailstock center in line for straight turning.

*Lesson 6.*—Face at an acute angle by use of compound rest. See that the angle is accurate, e. g., gas engine valves. Test with protractor and bevel.

### THREADING AND MANDREL WORK

*Lesson 7.*—Oral instruction: Threads, kinds and standards; change gears; thread-cutting compounds. Thread cutting, V or United States standard threads. Grind tools to fit thread gauge. Calculation of change gears. Catch the thread by reversing the lathe. Catch the thread by running the carriage back by hand without stopping the lathe when cutting a multiple of the lead screw. Catch the thread by the index on carriage of some lathes.

Practice cutting threads to fit the standard nuts 1/2 to 1 inch.

*Lesson 8.*—Thread-cutting V., U. S. S. and A. L. A. M. and pipe threads. Cut pipe threads by backing out tool by hand to get taper. Cut threads feeding tool in compound rest.

*Lesson 9.*—Practice in miscellaneous thread cutting.

### CHUCK AND FACE-PLATE WORK

*Lesson 10.*—Oral instruction: Chucks, centring and use of lathe tester. Chuck castings or forgings and face surfaces flat.

*Lesson 11.*—Boring: Chuck work, centring by cored hole or punched centre. Bore to size and uniform diameter. Drill in the solid by use of drill holder. Ream holes to size.

Bore cored holes to size for a short distance to guide the drill which is to follow. Make small bushings.

*Lesson 12.*—Bore taper holes using taper attachment.

*Lesson 13.*—Bore taper holes using compound rest (limited to shallow holes), e. g., hole in flange for pipe tap.

*Lesson 14.*—Face at an angle using compound rest.

*Lesson 15.*—Face-plate work: Give oral instruction on mounting and inside thread cutting. Fit threads by calipers and plug thread gauges.

*Lesson 16.*—Turn gas engine valve stems and face valves.

Practice must be given whenever possible in emergency repair work to develop resourcefulness.

ADVANCED WORK

*Lesson 17.*—Turn long pieces between centres necessitating use of steady or follow rests.

*Lesson 18.*—Sliding, driving, running, press, and shrink fits. Turn pieces to micrometer measurements or to gauge and fit accurately.

*Lesson 19.*—Turning on offset centres. Locate the centres so as to insure that the offset centre line is parallel with and the proper distance from the main centre line. Rough out and finish a single throw crank shaft. Avoid springing by pressure between centres. Use of counterweight to preserve balance.

*Lesson 20.*—Re-bore gas-engine cylinders, in chuck or in cradle on the carriage, with boring bar. Use care to avoid springing the cylinders in clamping.

*Lesson 21.*—Turn pistons to fit cylinders: Have piston walls uniform in thickness; ring grooves must be accurate and made to fit standard rings; piston pins at right angles to the axis of the cylinder. Use fixtures to hold pistons.

*Lesson 22.*—Piston rings. Chuck the tub; bore, turn, and cut off rings, face or grind to proper width, cut, compress in fixture, turn or grind to size, fit to cylinder, allow for expansion at joint. Explain the use of a magnetic chuck. Concentric and eccentric rings.

*Lesson 23.*—Pulleys. Bore and turn pulleys, keyseat in lathe with tool in tool post and used as a hand shaper.

Oral instruction: Soft metal turning, lubricants, cutting speeds, belt lacing.

*Lessons 24 and 25.*—Miscellaneous repair jobs for practice. Review of previous lessons. Final tests for course.

## COURSES FOR WOMEN

### A Sequence of Unit Courses in the Use and Preparation of Food

#### Unit I. Cereals and Starches

Six lessons as follows:

(1) Starch puddings, cream soups, and cream toast; (2) Breakfast cereals; (3) Rice, hominy, and barley; (4) Starch products, macaroni, and tapioca; (5) Beverages; (6) The breakfast menu.

#### Unit II. Fruits and Vegetables

Six lessons as follows:

(1) Value of fruits and vegetables in the diet. Ways of using fresh fruit; (2) Preparation of dried fruits and use in diet; (3) Ways of cooking potatoes; (4) Cooking green vegetables; (5) Vegetables as conservers of other foods; (6) The vegetable dinner.

#### Unit III. Milk, Eggs, and Cheese

Seven lessons as follows:

(1) Milk and its value in the diet; (2) Cooking of eggs; (3) Custards and custard puddings; (4) Frozen dishes from milk and cream; (5) Cheese and its uses in the diet; (6) Making and use of cottage cheese; (7) Luncheon menu.

#### Unit IV. Peas, Beans, and Nuts

Four lessons as follows:

(1) Peas and beans; (2) Pea and bean soups; (3) Nuts and their use; (4) The meatless meal.

#### Unit V. Meat, Fish, Poultry, and Game

Seven lessons as follows:

(1) Selection of meat; (2) Method of cooking tender cuts; (3) Cooking tough cuts; use of offal portions; (4) Method of extending meat flavors; (5) Soups and broths; (6) Fish and other sea foods; (7) Poultry and game.

#### Unit VI. Fats

Five lessons as follows:

(1) Selection of fats; methods of handling waste fat in the home; (2) Use of home-rendered fats in cooking; (3) Pastry; (4) Deep fat frying; (5) Salads and salad dressings.

#### Unit VII. Batters and Doughs

Six lessons as follows:

(1) Quick breads; (2) Use of whole wheat and graham flours; (3) Use of flours from other cereals; (4) Sour milk and molasses mixtures; (5) Yeast breads; (6) Cakes and cookies.

### Unit VIII. Sugar and Sweets

Five lessons as follows:

(1) The use of sugar in the diet; (2) Candies from cane sugar; (3) Candies from syrups; (4) Ices; (5) Gelatine desserts.

### Unit IX. Home Preservation of Food

Seven lessons as follows:

(1) Canning of fruit; (2) Canning of vegetables; (3) Fruit juices; (4) Jelly making; (5) Preserves, jams, butters, and marmalades; (6) Pickles; (7) Salting and fermentation.

### Unit X. Feeding the Family

Eight lessons as follows:

(1) How to estimate the food needs of the body; (2) Supplying the body with fuel; (3) The protein requirement; (4) Mineral matter necessary for growth; (5) Providing body-regulating substances; (6) Proper division of the food requirement into meals; (7) The cost of food for a day; (8) Planning the menu for a day.

### Unit XI. Special Adaptations of the Diet

Eight lessons as follows:

(1) Infant feeding; (2) Feeding children under school age; (3) Feeding the school child; (4) Feeding the aged; (5) Feeding in constipation; (6) Feeding in overweight for weight reduction; (7) Feeding in underweight for weight increase; (8) Adapting the menu to the needs of the family group.

### Unit XII. The Housekeeper and the Food Problem

Six lessons as follows:

(1) Discussion of the food problems of the housewife; (2) Home production of food; (3) Fuel and time saving in food preparation; (4) Simplifying standards of living; (5) Economy in buying of foodstuffs; (6) Community kitchens.

## A Sequence of Unit Courses in the Making of Clothing for the Family

### Section I. Beginners' Section

### Unit I. Chemise

Five lessons as follows:

(1) Introductory lecture, discussion, and demonstration; (2) Demonstration and classroom practice; (3) Hems, buttons, and buttonholes; (4) Neck and armhole finish; (5) Continuation of neck and armhole finishes.

### Unit II. Underskirt

Five lessons as follows:

(1) Introductory lecture, discussion, and demonstration; (2) Demonstration and classroom practice; (3) Fitting and stitching seams; (4) Placket facing and belt; (5) Hem and flounce.

### Unit III. Bungalow Apron

Four lessons as follows:

(1) Introductory lecture, discussion, and demonstration; (2) Demonstration and classroom practice (speed emphasized); (3) Seams, facing neck and sleeves; (4) Hem, Pocket, and Belt.

### Unit IV. Care and Repair of Clothing

Two lessons as follows:

(1) Lecture, demonstration, discussion, and classroom practice; (2) Repair of outer garments and fine linen.

## Section II. Elementary Dressmaking

### Unit I. Budgets

One lesson as follows:

(1) Introductory lecture, discussion, and demonstration.

### Unit II. Washable Waists

Five lessons as follows:

(1) Introductory lecture, discussion and demonstration; (2) Demonstration and classroom practice; (3) Fitting, alterations, second fitting, seams; (4) Tailored waist; (5) Finish at bottom, cuffs.

### Unit III. Washable Dresses

Nine lessons as follows:

(1) Introductory lecture, discussion and demonstration; (2) Demonstration and classroom practice; (3) Fitting, alterations, refitting; (4) Stitching and finishing seams; (5) Plackets; (6) Finishing skirt at waistline; (7) Laying and finishing hem; (8) Belt or girdle; (9) Placing cuff or other wrist finish, making and placing collar, closing.

### Unit IV. Care, Repair, and Renovation of Washable Garments

Two lessons as follows.

(1) Lecture, discussion, demonstration and classroom practice; (2) Dyeing.

## Section III. Advanced Dressmaking

### Unit I. Wool Dress

Eleven lessons as follows:

(1) Introductory lecture, discussion and demonstration; (2) demonstration and classroom practice; (3) Fitting, alterations, homework; (4) Second fitting, seams, methods of making seams, pressing seams, finishing plackets; (5) Stitching, finishing seams of waist; (6) Sleeves; (7) Finishing front of waist, lining, homework; (8) Hanging skirt, hems, homework; (9) Collar, cuffs, girdle; (10) Finishing dress; (11) Class criticism of dresses.

### Unit II. Dress Form

Eight lessons as follows:

(1) Introductory lecture, discussion and demonstration; (2) Demonstration and classroom practice; (3) Padding form, homework; (4) Draping; (5) Sleeves; (6) Fitting waists and sleeves, skirts; (7) Draping dress; (8) Class criticism.

### Unit III. Party Dress

Nine lessons as follows:

(1) Introductory lecture, discussion and demonstration; (2) Demonstration and classroom practice; (3) Draping pattern for dress; (4) Waist and overdrapery; (5) Draping sleeves, fitting; (6) Preparing pattern for use, cutting; (7) Draping for fitting, fitting, finishing seams, plackets, closings, etc.; (8) Edge finishes, replacing drapery; (9) Finish draping, girdle, finish dress.

### Unit IV. Care, Repair, Renovation, and Remodelling of Silk and Wool Garments

(1) Lecture, discussion, demonstration, and classroom practice; (2) Remodelling, examination of garments, placing pattern on material, piecing, cutting, basting for fitting.

## Section IV. Infants' and Children's Clothing

### Unit I. Layette

Four lessons as follows:

(1) Introductory lecture, discussion, and demonstration; (2) Flannel undergarments, discussion and direction for making; (3) Dress or slip and nightdress; (4) Kimono wrappers and sacks, bootees, blankets, hood capes, knitted caps, coats, sleeping bags.

### Unit II. Children's Clothing

Four lessons as follows:

(1) Introductory lecture, discussion and demonstration; (2) Demonstration and classroom practice; (3) Finishing bloomers or drawers, finishing dress; (4) Finish of dress.

### Unit III. Boy's Suit (Wool )

Nine lessons as follows:

(1) Introductory lecture, discussion and demonstration; (2) Demonstration and classroom practice; (3) Making jacket; (4) Making jacket—continued; (5) Sleeves, lining; (6) Buttonholes and buttons, finish jacket; (7) Making trousers; (8) Making fly; (9) Finishing.

## Section V. Millinery

### Unit I. The Making of a Hat Frame

Twelve lessons as follows:

(1) Introductory lecture, discussion and demonstration; (2) Demonstration and classroom practice; (3) Crowns; (4) Method of wiring and preparing frame for covering; (5) Brim; (6) Altering commercial shapes; (7) Wire frames; (8) Making wire brim; (9) Wire crowns; (10) Covering frame; (11) Lower brim covering; (12) Covering crown.

### Unit II. Trimming Hats—The Care and Renovation of Hats

Seven lessons as follows:

(1) Discussion of trimmings, planning for trimming; (2) Hand-made trimmings; (3) Hand-made trimmings—continued; (4) Trimming hats; (5) Linings; (6) Care of hats, renovation; (7) Renovation of hat and trimming materials—continued, re-trim and re-line hat.